Lessons Learned from Blended Programs:

Experiences and Recommendations from the Field

Edited by:

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iNACOL
International Association for K-12 Online Learning

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For our family, friends, and colleagues who have kept the faith and fought the good fight; for education's dreamers and transformers.

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Foreword

The International Association for K-12 Online Learning (iNACOL) is committed to providing each and every student with access to a world-class education, regardless of geography or economy. As the global workforce becomes more competitive, students in the United States require higher and deeper learning skills. We have a moral imperative to offer more effective, new learning models to help students achieve their goals by offering first-class educational opportunities to develop both the knowledge and 21st century skills that will prepare them for a successful future in college, careers and life.

This book serves to provide in-depth case studies of blended learning programs from the perspective of experts and pioneering leaders in the field today.

The chapters have been collected to share lessons and stories from the experiences of those leading the development of new learning models using blended learning across the nation. From the start, *Lessons Learned from Blended Programs: Experiences and Recommendations from the Field*, helps to establish a framework for evaluating and understanding the blended learning field, from developing individual schools to working with entire districts to create new blended learning pathways for students in an increasingly digital world.

Drawing upon the significant work of diverse organizations across the country building the tools and resources our students will be using in classrooms and online, these collected perspectives from the practitioner level upwards is critical as we navigate the sea change of policy and practice required to dramatically improve student learning outcomes using new blended learning models. We intend these new case studies to build upon the existing body of knowledge and provide additional in-depth understanding of emerging models — a broad range of research is needed for better understanding the lessons learned from emerging programs.

Personalization, mastery, and rigorous, student-centered learning experiences are the cornerstones of more effective blended learning model design. The vision of bringing all students up to high levels of competency, knowledge, and skills will be realized when educators are able to collaborate to channel a strong spirit of innovation and perseverance in order to pioneer very necessary changes to the way education serves students in the United States and across the globe.

—Susan Patrick is the president and CEO for the International Association for K–12 Online Learning (iNACOL). iNACOL's mission is to strive to ensure all students have access to a world-class education and quality online learning opportunities that prepare them for a lifetime of success.

Preface

Following up on the successful publication of iNACOL's inaugural book, *Lessons Learned from Virtual Schools*, this publication focuses directly on blended elementary and secondary programs in the United States. iNACOL, Innosight, and others tout the "rise" of K-12 blended learning as a route to student-centered, personalized, outcome-focused education. Innosight's 2011 report profiles 40 key examples of blended learning programs[1]. Missing from these reports and online profiles are in-depth case studies that further explain and detail growth and outcomes of these programs from the perspectives of their leaders. Strategies for replication and improvement are key learnings that could transform new blended programs.

As blended programs rise in popularity, administrators and policymakers will benefit from the opportunity to explore policy and practice within successful programs. Those currently participating in blended programs will have the opportunity to explore effective practices within other models. Historians, educators, and parents new to blended learning will have the opportunity to explore the history, current processes, and future goals of these new forms of education. Finally, this book could be used as a reader for undergraduate teacher preparation programs as Colleges of Education begin preparing students for teaching in blended programs, as well as for in-service professional development programs in which practicing teachers are adopting blended approaches. Such a reader would also be useful for programs that are preparing other education professionals (e.g., administrators, guidance counselors, instructional designers, educational technologists, and media specialists).

[1] Staker, H. (2011). *The Rise of K-12 Blended Learning*. San Mateo, CA: Innosight Institute.

When this book was conceptualized, blended K-12 programs were very new, and very few had operated for the years necessary to result in lessons learned. The following programs were established, had collected lessons and data, and were led by pioneers who welcomed the chance to share their story with the K-12 education community.

To set the stage for the specific program stories, the book begins with a K-12 *blended program approach* described as a "Roadmap to Blended Learning School Design" by leaders of Education Elements. Following this Roadmap, a series of program chapters are grouped according to whether the entity discussed operates as part of a school system, a school partnership, a school, or a university.

A blended program is operated by the *school system* in one of America's largest urban areas.

- The Southern California district of Riverside County embarked on system redesign in order to improve student performance and graduation rates by creating a district virtual school that grew into a blended program.

On the East and West Coasts, four urban *school systems partnered with education management organizations* to address high-need students through development of blended programs.

- Maryland's Prince George's County worked with Connections Academy to create a program for under-credited 11th and 12th grade students.
- San Jose, California, schools worked with Rocketship Education to accelerate achievement in grades K-5.
- Los Angeles schools worked with KIPP to develop primary grades blended charter programs.
- Los Angeles area schools have also partnered with the Alliance for College Ready Public Schools on a blended STEM-focused high school.

In three states, *individual private, parochial, and public schools* developed blended programs to take advantage of the benefits of multiple learning environments and a wider range of learning resources for their high school programs.

- The private Southern California Fairmont Preparatory Academy created a blended program to offer summer courses that have grown into full-year offerings.
- The parochial Bishop Kelly High School in Boise, Idaho, developed a blended program to better prepare students for college and the digital age.
- The public Kentwood, Michigan, high schools use blended programs to increase education options for students.

At Stanford University, a *national blended program* was established to leverage university assets in serving the needs of gifted students through the Education Program for Gifted Youth Online High School.

As you read these chapters, consider how you can apply the lessons from the programs. Some of these questions might guide your thinking as you read and your actions after you read.

- How do these models of success inform my program planning?
- How do these examples of effective approaches influence my teaching?
- What insights do these stories offer me for new career paths?
- What principles do these approaches offer for course development?
- How do these stories change my understanding of the range of settings where K-12 teaching and learning occur?
- How do these programs guide policy decisions at local, regional, state, and national levels?
- How does this information guide the selection of schooling options or advocacy in schools for children?

About the Editors

Richard Ferdig, Ph.D., is the Summit Professor of Learning Technologies and Professor of Instructional Technology at Kent State University. He works within the Research Center for Educational Technology and also the School of Lifespan Development and Educational Sciences. He earned his Ph.D. in Educational Psychology from Michigan State University. He has served as researcher and instructor at Michigan State University, the University of Florida, the Wyzsza Szkola Pedagogiczna (Krakow, Poland), and the Università degli studi di Modena e Reggio Emilia (Italy). At Kent State University, his research, teaching, and service focus on combining cutting-edge technologies with current pedagogic theory to create innovative learning environments. His research interests include online education, educational games and simulations, and what he labels a deeper psychology of technology. In addition to publishing and presenting nationally and internationally, Ferdig has also been funded to study the impact of emerging technologies such as K-12 Virtual Schools. Rick is the Editor-in-Chief of the International Journal of Gaming and Computer Mediated Simulations, the Associate Editor-in-Chief of the Journal of Technology and Teacher Education, and currently serves as a Consulting Editor for the Development Editorial Board of Educational Technology Research and Development and on the Review Panel of the British Journal of Educational Technology.

Cathy Cavanaugh, Ph.D., is Associate Director of the Abu Dhabi Women's College, the largest of the Higher Colleges of Technology in the United Arab Emirates. Her work focuses on effective learning environments and learning design. She recently served as a Fulbright Senior Scholar working on e-learning for developing countries in Nepal, and she received the Outstanding Research Award in 2009 from iNACOL for her publications on virtual schools effectiveness. She has degrees in education from the University of South Florida, University of Central Florida, and University of the Virgin Islands. Formerly a United States university faculty member in educational technology, a professional development center director, and a secondary science teacher, Cathy has been an educator in K-12 and adult settings since 1982.

Joseph R. Freidhoff, Ph.D., is the Director of Online Learning Research and Innovation at the Michigan Virtual University and holds a doctorate in Educational Technology from Michigan State University. His work focuses on data-driven decision making, analysis of online student and teacher performance, course evaluation, and data optimization. In the past, Joe has worked as a secondary school teacher and has taught undergraduate- and graduate-level courses in both face-to-face and online formats.

Acknowledgements

The views expressed in this book are the views of the authors and do not necessarily reflect the views or policies of iNACOL. The editors extend thanks to iNACOL for its leadership and innovation in communicating the potential of K-12 online and blended schooling.

The editorial team is indebted to the school leaders who engaged with us in this work. They spent hours discussing their programs, developing their chapters, making adaptations over the months of book development based on our review, and then updating the chapters to include the most recent data. Thank you for your trust and your efforts.

We must thank the scholars engaged in K-12 online education research. You have continued to push our thinking. We look forward to working with you in supporting the important work that is happening daily in innovative schools. iNACOL is a hub, clearinghouse, and cheerleader of this work. We appreciate the leadership of Susan Patrick and the book support provided by Matt Wicks. We would also like to extend our thanks to Katherine Schottke from Kent State University who assisted in the collection and organization of this work.

Richard E. Ferdig, Research Center for Educational Technology, Kent State University

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CHAPTER

1

An Introduction and Overview of K–12 Blended Education

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Joseph R. Freidhoff, Michigan Virtual University

Elementary and secondary schooling in North America is increasingly being redefined from "site to service" (Cavanaugh & Hargis, 2010) as the emphasis in education has begun to shift from being a location where students have similar experiences along similar time lines depending on system needs to being a personalized program provided as needed, where needed, and when needed depending on student needs. This site-to-service shift includes several changes that we see emerging as influences on the design and delivery of education, as shown in Table 1-1.

Table 1-1 Shifts from Site to Service

Shifts from Site to Service		
Shifts	**Site: school**	**Service: education**
Place	School for lessons and assessments; home for practice	School, home, community, and field for all activities
Time	6.5 hours/day; 180 days/year between August and June	Any time, any day, year-round
Materials	Physical and virtual; owned by the school with limited access outside of school	Physical and virtual; increasingly in public domain and by student subscription for access any time on student devices
Interactions	Teacher-directed; mostly occurring in school	Teacher-moderated; occurring any time
Assessments	Scheduled for all students according to syllabus	Given as individual students reach mastery

These shifts in the design and delivery of schooling have so far been largely made possible by technology, and their degree of priority has increased due to a range of economic and social conditions. Schools are serving a wider range of students in the mainstream program; schools are under pressure to make efficient use of space and resources; schools are held accountable for each student's academic performance; schools are seen as a key in the nation's economic competitiveness; and thus, schools are depended upon to provide college- and career-ready graduates. Because the technology now exists for differentiated instruction, these priorities are increasingly met through blended education programs that merge physical and virtual learning environments to serve students with greater flexibility and agility.

In K-12 schooling, examples of technology-enabled blended education date from the beginning of educational technology. Classroom learning time has been enhanced, augmented, and partially replaced by technology for as long as the technology has been available. The past decade has seen a steady increase in the development and implementation of blended education programs as technology has become more powerful and ubiquitous. However, it has been only in the past few years that deliberate blended education programs have developed to the scale at which we can draw lessons from them. This book is a collection of such lessons.

Each blended education program is developed to achieve a specific goal. The nine programs profiled in this book represent a wide range of contexts and goals, and thus, represent a range of lessons that should guide anyone involved in blended education. These programs have descended from varied "family trees" populated by traditional schooling approaches, educational technology, virtual schooling, public education, private and parochial education, charter and choice schools, urban and rural education, regular and exceptional student education, and elementary and high school levels. Table 1-2 contrasts the programs.

Table 1-2 Blended Program Features

Blended Program Features					
Program	**Grade levels**	**Location**	**Urban or rural area**	**Partners**	**Purpose**
Riverside Unified School District	3–12	Riverside County, CA	Urban	Riverside schools	Provide a rigorous, college-preparatory online school program that meets the needs of 21st century learners; preparing graduates for successful careers in a competitive global marketplace
ACCESS	11–12	Prince George's County, MD	Urban	Prince George's County, Connections Learning	Increase graduation rates of under-credited students
Rocketship Education	K–5	San Jose, CA	Urban	San Jose schools, Rocketship Education	Eliminate the achievement gap in high-need neighborhoods
KIPP LA	Primary	Los Angeles, CA	Urban	Los Angeles schools, KIPP	Provide families with choice in an area where the public schools have been underperforming
Alliance Technology and Math Science High School	High school	Los Angeles area, CA	Urban	Los Angeles Schools, Alliance College-Ready Public Schools	Demonstrate student academic achievement growth and graduate students ready for success in college
Fairmont Preparatory Academy	High school	Southern California	Suburban	Fairmont Schools, Thesys	Prepare students for college by integrating the classroom and online technologies to improve student outcomes
Bishop Kelly High School	High school	Boise, ID	Suburban	Bishop Kelly High School	Use technology to maximize student learning
Kentwood Public Schools	High school	Kentwood, MI	Suburban	Kentwood high schools	Provide an alternative method for meeting new state graduation requirements
Education Program for Gifted Youth	7–12	Stanford, CA	National	Stanford University	Offers college-preparatory and college-level courses to gifted students with instructors who are experts in their fields

The participating blended programs are located in four U.S. states across the four continental time zones, with six programs based in California. All grade levels and academic levels of students are served by the programs. The stories show how blended programs can operate in small schools, large schools, districts, and universities.

Other books have documented blended education approaches in adult and higher education (Bonk & Graham, 2005 Garrison & Vaughan, 2008; Picciano & Dziuban, 2007), and recent reports have described K-12 blended education (Watson, 2010; Staker, 2011; Staker & Horn, 2012). This book is a step in establishing the practice-based literature on effective K-12 blended education through detailed documentation of programs. Only by sharing the lessons learned in the schools themselves can the field make efficient

progress on behalf of students. The stories collected in this book are told from the perspectives of the pioneers and leaders of pioneering blended education programs. These stories show the many forms a successful K-12 blended education program can take and how the design of each program fits its purpose, audience, and setting.

The primary purpose of this book is to emphasize the advances that are rapidly becoming prevalent in North American schools in the design of teaching and learning experiences and environments, rather than to focus on the specific changes in how time and place are used. The purpose is not to promote a particular model or definition of blended education from among the constellation of approaches that have emerged in recent years. Rather, this book is a telescope that can bring those approaches into focus and allow readers to examine and evaluate each approach after seeing them side-by-side. Groups like Sloan Consortium and Innosight have developed frameworks for classifying blended education programs, including the taxonomy based on locations and groupings for learning activities (Staker & Horn, 2012).

The book begins with a Roadmap to Blended Learning School Design that builds from both the earlier literature on blended education and the personal experiences of the roadmap's authors in developing blended schools. This chapter gives an overview of blended K-12 approaches in the United States and describes four broad models that characterize many blended programs in operation today. It helps readers select and apply a model by presenting concrete guidelines for school planners. This roadmap is a useful springboard from which to jump into the succeeding blended program stories.

Each program chapter is a case study of a K-12 blended education program, written by leaders of the program who share its development, approach, impacts, and outlook with the following topics:

1. Context
2. Overview
3. Results
4. Implications

These headings are detailed below to provide brief descriptions and examples of the information included in each of these sections.

Context

This section contains information that sets the stage for where the blended program was implemented. For instance, authors may describe the larger school, the district, and/or the community where the program operated. Authors may also use this portion of the chapter to describe the reasons why the program was proposed or the administrative structure that allowed for the implementation.

Overview

In this section, authors introduce their blended program, highlighting the history of the blended program (rather than the history of the context in which it was implemented) and defining what they mean by blended. The chapter content answers such questions as when the program was created, when it began, how many students it serves, what content is involved, and what type of students are included. Authors also discuss whether program content was obtained or self-created, how professional development was conducted and the kind of professional development that was critical to this program, and the type of technology or technology providers used.

Results

Once readers are introduced to the background context and a description of the actual program, authors provide data and findings to highlight the points of pride and obstacles experienced within the programs. Data may be qualitative or quantitative and may include statistics, graphs, charts, presentations, and publications to support the findings and/or results. Chapters focus specifically on positive and negative outcomes related to increases or decreases in enrollment, teacher retention, and student-based cognitive, social, and affective learning outcomes. Outcomes could also include public response, specific areas of accomplishment/awards, changes in graduation, course completion, changes in dropout rates, and the impact of the program on the nature of teaching and learning in the context and in the larger environment of this program.

Implications

The final section of the chapter builds from the results, practices, and strategies of the program to provide lessons learned for readers. Authors consider what they wish they had known before they began, as it relates to their current positive and negative outcomes. These strategies may relate to the broader context or to the administrative structure, school, program, teachers, students, others (e.g., community and/or parents), curricula, and technology. Authors address these implications to multiple audiences, such as researchers, policymakers, teachers, students, professional development staff, content providers, and technology purchasers.

Education in any learning environment is a complex, challenging professional practice; education across various learning environments multiplies the complexity and challenge. Formal research is needed in order to illuminate promising practices for each intersecting student and learning goal. These lessons shed light on those practices as one form of data to guide action. Data from practice must be coupled with data from research. We implore readers to do what they can to support research in K-12 blended education: open your programs to researchers, engage in Scholarship of Teaching and Learning to share your lessons, seek researcher funding and partnerships, disseminate research findings, participate in research conferences, read research journals, and assist researchers-in-training as mentors. We are all members of the Community of Practice and Scholarship that advances outcomes for students as we learn together.

SECTION ONE

Program Design Approach

CHAPTER

2

Roadmap to Blended Learning School Design

Anthony Kim
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The Buzz around Blended Learning

When we started to do research to define blended learning, we found many definitions: "mix of different learning environments . . . combines traditional face-to-face classroom methods with computer activities" (Veras, 2012) to "blended approach combines the best elements of online and face-to-face learning" (Watson, 2008) and "blended learning is a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home" (Staker & Horn, 2012).

Illustrations by: Kawai Lai, School Programs, Education Elements

We believe these are true from a broad definition standpoint; however, implementation and interpretation of these definitions do vary. It is true that when most people visit a "blended learning" school, the first thing they notice is the use of computers as part of the daily instruction, and we suspect that is why there is so much confusion around what blended learning is. In our work, we try to focus our school partners on the following thoughts: Blended learning leverages technology to create a learning environment where students have daily opportunities for individualized learning and teachers have the opportunities, resources, and time to differentiate small group instruction in a classroom. Blended learning environments are based on individualized learning opportunities for every student, differentiated instruction supported by data-rich feedback loops, and sustainable school models.

Figure 2-1 Technology makes small group instruction and individualization instruction scalable.

For a number of years, schools across the country have had computer labs and have used some form of digital content. Just because a school puts students on computers doesn't mean they have blended learning models. What happens in a blended learning school as we define it looks very much like guided instruction in small groups, where some students receive differentiated small group instruction and some students are doing independent practice. This idea of stations or circles is a staple of many elementary classrooms. The difference is that in a blended learning school, independent practice may be done on a computer, and direct instruction and introduction could be provided through digital content and the teacher. Access to this data in real time provides targeted instruction for each student, without having multiple teachers in the classroom.

We are finding that today's students are much more engaged when using digital content than pencil and paper. Within digital content, not only do students get immediate feedback and support, they also get rewarded for progress, receive clear direction and next steps, and can go at their own pace. It would be impossible for a school to achieve this without technology. A school would need a teacher for every student; at the same time, no one will argue the value of a teacher for instruction. However, if the teacher could spend 45 minutes or 90 minutes of each day individualizing instruction, teaching students how to apply concepts, or encouraging students to engage in group discussion, this is where blended learning comes in. By leveraging technology, we can create a situation where

teachers have more time to address specific student needs by creating efficiencies in data collection, classroom management, student engagement, and direct instruction.

In a blended instructional model, the role of the teacher changes from the dispenser of information to the learning guide. No longer is a teacher responsible for creating and executing lessons providing core content to the entire class. Students will receive core instructional content, at their own level and pace, through the online digital modules. This change in structure frees the teacher to focus more discreetly on meeting the needs of those students who struggle and, conversely, those who excel in a particular area. The laudable goal of differentiating instruction to all students at their own levels is nearly impossible with one teacher and 30+ students in a classroom. By utilizing digital content, this burden is transferred from the teacher to the online content.

Utilizing digital content not only benefits students who might typically struggle to understand concepts in a traditional classroom, it also allows students who master the material to move forward toward deeper understanding and delve into new concepts, thus accelerating their learning velocity along the way.

One of the key observations we have made comes from the Khan Academy reports (Figure 2-2), indicating the various progressions of students through the digital content and specific plateaus where students were not able to advance to the next module. Conceptually, we believe that if teachers have this data and can intervene to shorten these plateaus, they can effectively increase students' learning velocity and create more effective instructional time. Figure 2-3 shows that by shortening the plateaus, we can effectively create 20 additional instructional days.

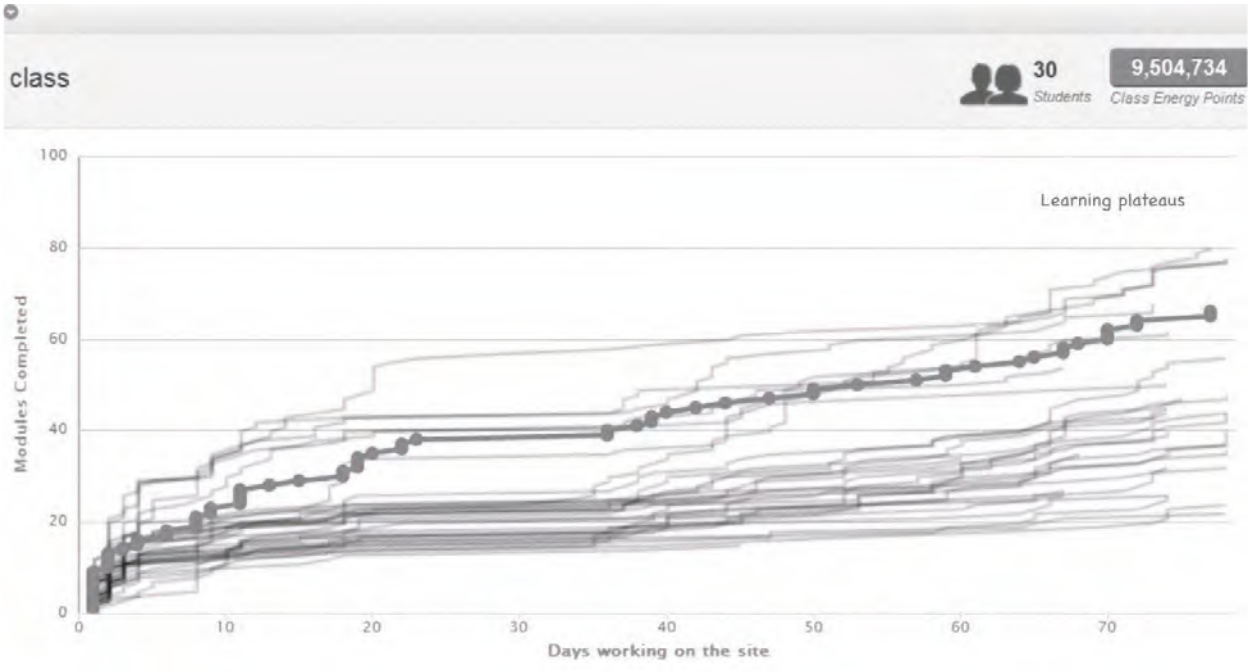

Figure 2-2 A Khan Academy sample report.

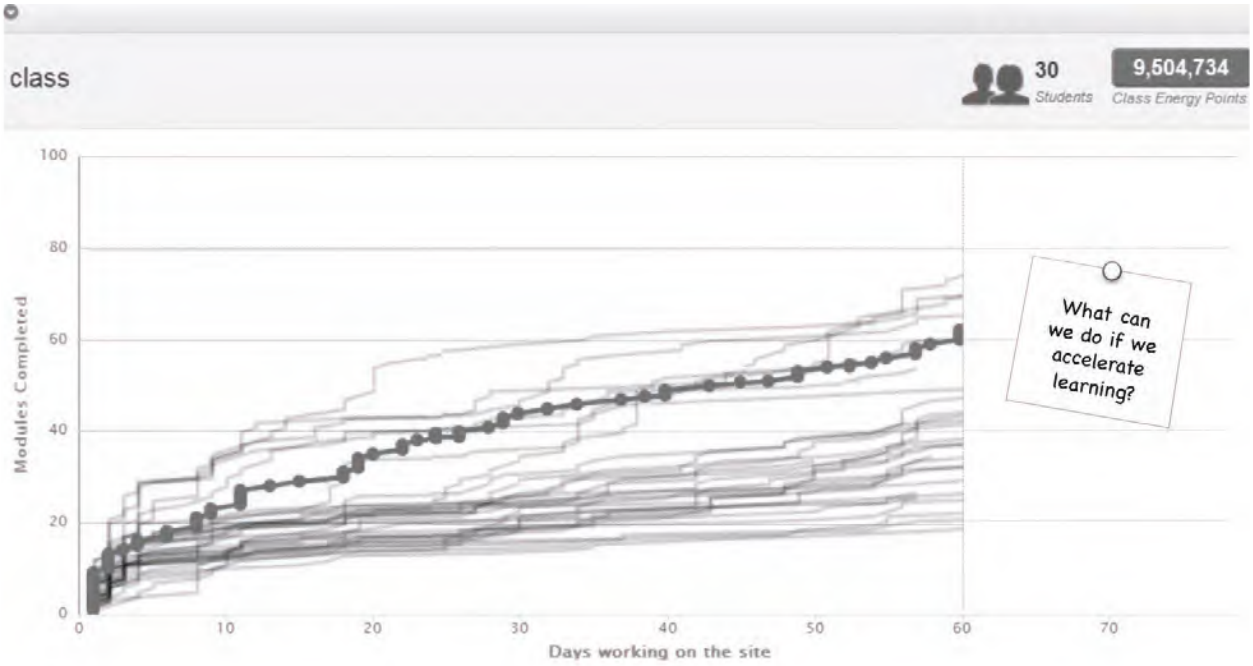

Figure 2-3 A Modified Khan Academy report.

As students are moving forward in this digital content, the teachers are provided with crucial, real-time data about their students' progress. With this daily assessment data, teachers can determine the most appropriate resources and methods to use with their students in a small group setting. This time may be spent reteaching students who are struggling to understand a concept or providing a thought-provoking project or challenge to those who have mastered the material.

Why choose blended learning?

As we work with school administrations that are contemplating moving to a blended learning model, we find there are many reasons why they consider doing so, ranging from the financial to the practical to the innovative. As schools are facing deeper budget cuts, the negative impact on class size and student/teacher ratios is more severe. To counter this, administrations are looking for more cost-effective methods of providing increased differentiation and individualization. Additionally, they are becoming acutely aware that traditional methods of teaching and learning are proving less effective in our competitive, global society. Lastly, they are awakening to the reality that their students are connected and demand learning experiences that meet their current realities outside of the classroom. All of these elements move school administrations to consider a solution that provides true differentiation, utilizes the learning tools and environments modern students are using, and do so at cost savings over the current models. This solution is blended learning.

Initially, school administrations may have one reason that draws them to blended learning. It may be to ensure effective education at greater efficiencies or to provide greater differentiation to students. In either case, they typically begin the process unaware of the full potential of blended learning and often are uninformed about the models, tools, and solutions available. They may think that blended learning requires their students to spend a significant portion of their learning outside of school or that the digital content completely replaces the need for their teachers. Although some models do extend learning outside of the school day and the role and number of teachers does change in blended learning, the very essential fiber of education—the relationships in a school between students and teachers—is strengthened in blended learning environments.

Although it may be a desire to adjust to new financial limitations brought on by deep state budget cuts that initially propels a school administration to consider blended learning, they soon discover the transformative benefits that blended learning brings to students and teachers alike in creating truly differentiated learning and a stronger, more effective guiding relationship between the teachers and students.

What are some of the models we see today?

In our work across the country, we see benchmark models such as Lab Rotation, Classroom Rotation, Individual Rotation or Flex, and Pod, and some schools are using a combination. These models all have the following in common: 1) individualized and differentiated group instruction, 2) data-driven cultures, and 3) lower cost per pupil for instruction. These are early days of thinking about whole school blended learning models, and we anticipate that other blended learning models will be developed in the future. However, today we see most of the models taking on one or more of these characteristics.

Lab Rotation Model

The lab rotation model is when the schedule is modified so that students spend one period each day in a learning lab, typically for math and English language arts, and another period each day with the teacher for math and English language arts. The learning lab is a room of computers where students get instruction and practice using digital content. The data from the content is provided to the teacher to inform the teacher's lesson plans. Typically, in the classroom, the teacher is guiding small group instruction, based on the homogenous groups that have been formed. This model works well in elementary grades where science and social studies programming is limited. A few of the schools around the country that have implemented this model are Rocketship Education (*http://www.rsed.org/*), FirstLine Schools (*http://www.firstlineschools.org*), and IDEA Public Schools (*http://www.ideapublicschools.org*).

Figure 2-4 Students rotate from a learning lab to a classroom for one period.

Classroom Rotation Model

The classroom rotation model puts the learning lab described in the lab rotation model in the classroom. The class may be broken out into two, three, or four groups, and there is a 3:1, 2:1, or 1:1 ratio of students to computers. Students rotate between teacher-guided instruction and the computer station each period, so that every day students have an opportunity for time on the computer and with the teacher. A benefit of this model is keeping all students in their own classroom under the direction of the teacher who knows them. The key to this model is how the data is used from the content to inform weekly lesson plans and the weekly analysis of the student groups to ensure differentiation. KIPP Empower Academy (*http://www.kippla.org*), Alliance College-Ready Public Schools (*http://www.laalliance.org/*), and Mission Dolores Academy (*http://www.mdasf.org*) have implemented the classroom rotation model.

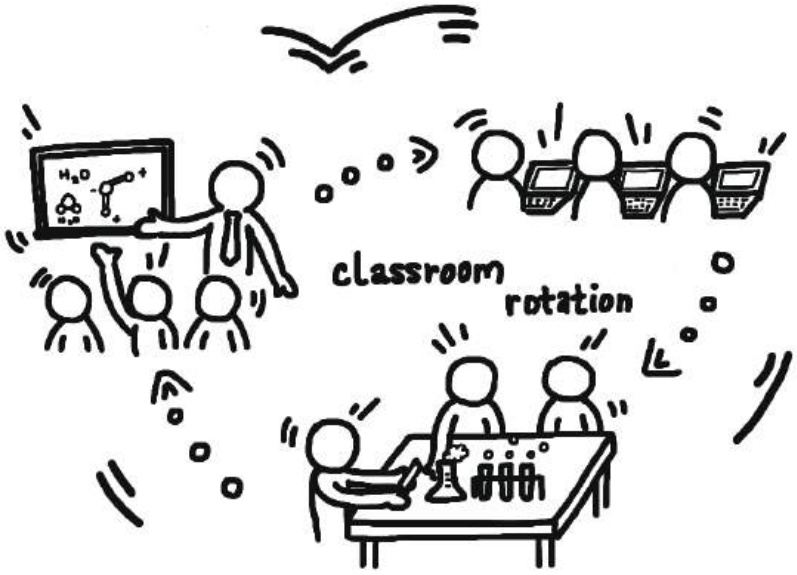

Figure 2-5 Students rotate in small groups between different stations.

Within the classroom rotation model, there can be many variations of implementations. Depending on the grade and comfort level of the school, we may recommend one of the following configurations. Often, elementary schools will choose a two-group rotation model, dividing the learning time between digital content and teacher-led instruction. As schools become more comfortable with blended learning and students are more independent, such as at middle and high school, they may opt for a three-group rotation, combining either a peer-tutoring station or a project-based collaborative station. Teachers can choose from different configurations, depending on their comfort level with classroom management and small group instruction (Figure 2-6).

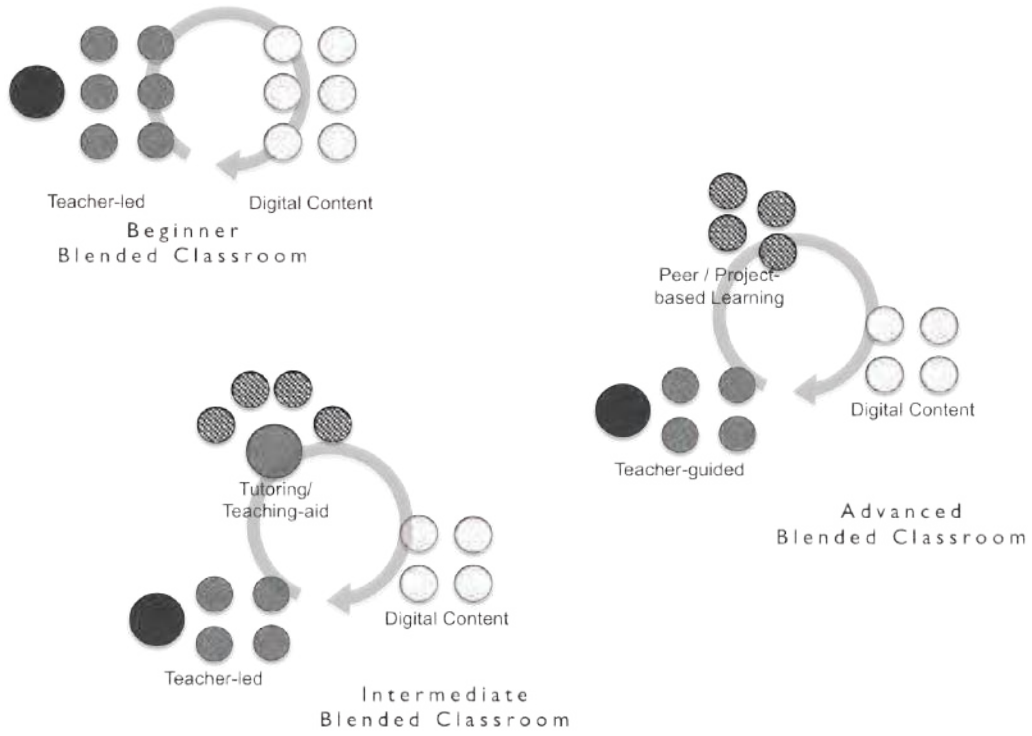

Figure 2-6 Blended classroom configurations

Individual Rotation, or Flex, Model

The appearance of this model looks unique. What a visitor will see is a large room with as many as 300 students with their own computers. Around the perimeter of the room are breakout rooms, where a teacher provides instruction to a group of 5–10 students. Students receive most of their instruction on the computers; however, the teachers have breakout sessions with the students on an as-needed basis. Similar concepts have been implemented in dropout recovery schools, but what makes schools using this model different is how the data from the digital content is used and provided to the teacher. In this model, someone is dedicated to looking at the data and setting up the student groups for each subject, which creates an environment where the teacher focuses on delivering targeted instruction using multiple techniques, such as the inquiry-based, project-based, and Socratic methods. This model is implemented at Carpe Diem Academy (*http://www.carpediemschools.com*).

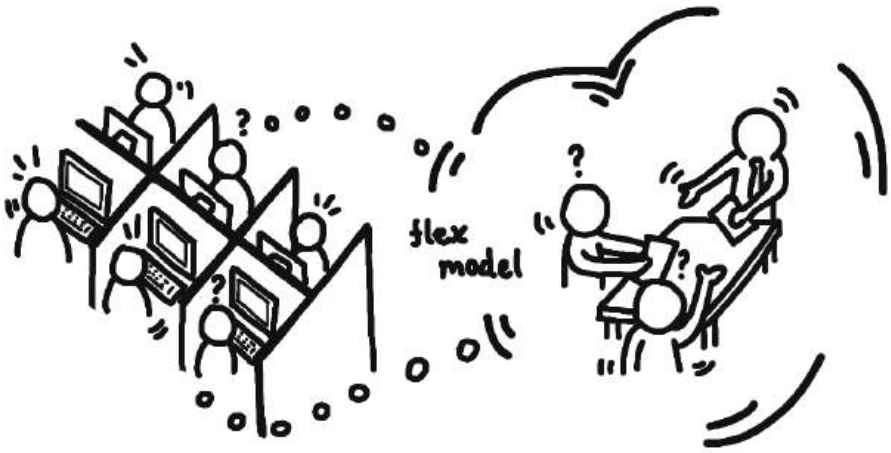

Figure 2-7 Students begin in a large room using digital content and are then put into small breakout groups.

Pod Model

The pod model takes groups of 50–100 students and creates a school within a school. Each pod may be made up of multiple grade levels. Additionally, the pod model looks at the teacher role differently and breaks apart the core functions into different roles, e.g., instruction, grading, advisor, and behavior. Each pod may have an adult assigned, based upon one of these roles. Students receive most of the instruction on the computer, like in the flex model, but they also have a dedicated adult team assigned to each pod. Some schools are finalizing the design of this model today.

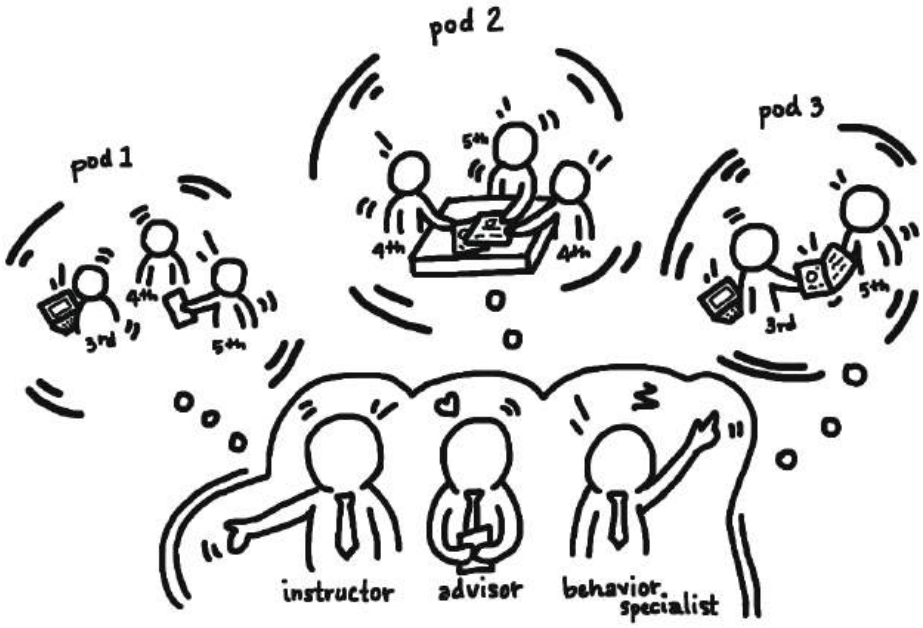

Figure 2-8 The teacher role is deconstructed and students are in multiple grade-level groups.

When considering which model best fits a school, each one of these models will have different constraints, ranging from student-teacher ratios, highly qualified teacher requirements, bandwidth limitations, line of sight issues, and facilities. Depending on whether the school building is new or an existing school, certain models will be better suited and easier to implement. What is consistent in each of these models is that they all lower the per pupil cost for instruction, they have been providing tremendous academic results, and they use data heavily to drive instruction and preparation.

Figure 2-9 shows the rubric we use to help school administrations make decisions regarding which model may be best suited for their needs. Typically, the discussion starts with one of the top tiles: facilities, talent management, or instructional model. Based upon the school's initial model preference, they can use this rubric to consider how the model may or may not fit within their constraints. By using this process, they will eventually determine the pros and cons of one or two of the models.

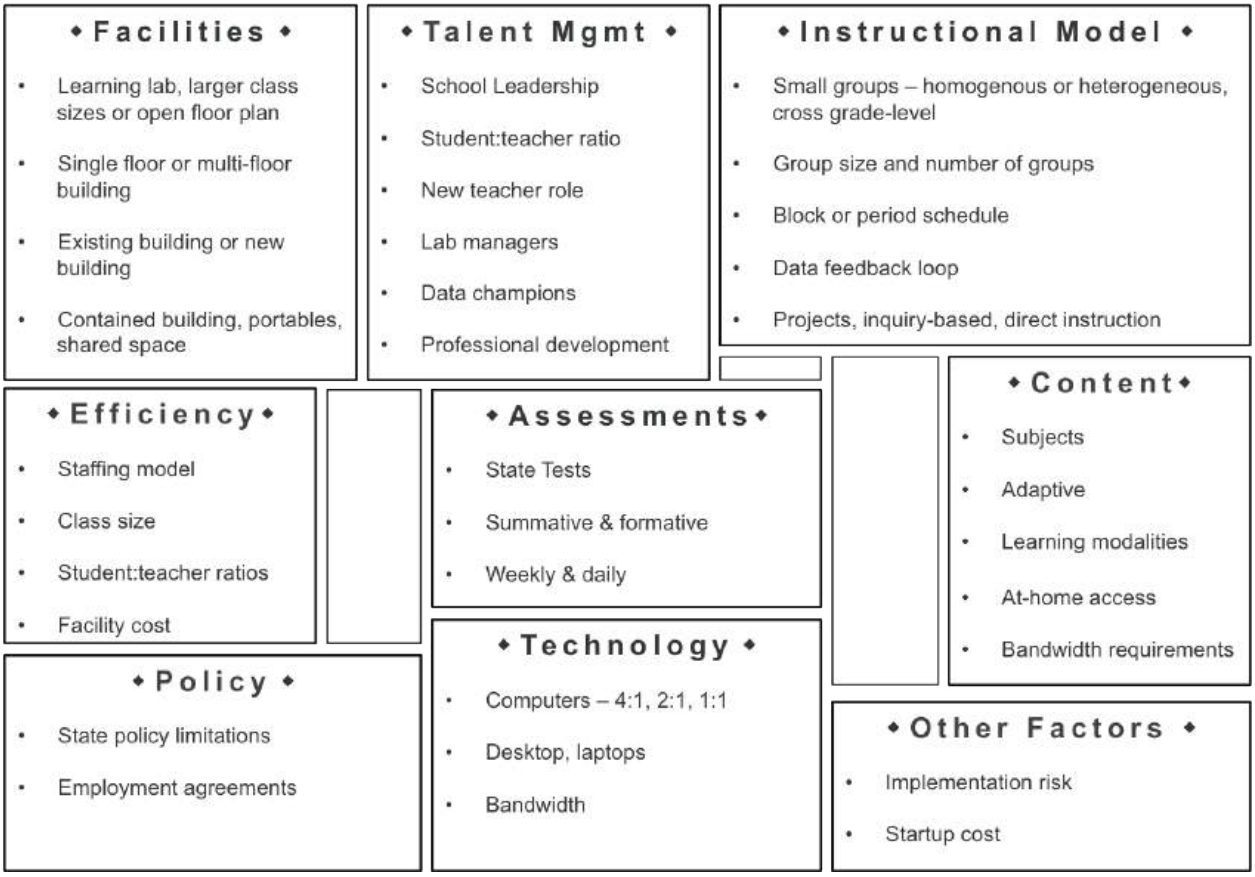

Figure 2-9 Rubric for model selection

Using the Rubric

The best way to use the rubric is to consider the tiles, how they relate to each other, and how each one fits the environment, and then determine which are key anchors in the decision making for the school administration.

Facilities: Depending on the facilities constraints, one model may be easier to implement than another. For example, is the building a new school site, which can have an open floor plan required by the flex model or pod model? Does the building have a room large enough to support a learning lab for the lab rotation model?

Talent Management: When trying to understand how teachers need to be prepared and trained, and how comfortable they will be, often it helps when components of blended learning have already been implemented. What are the current student-teacher ratios at the school? Are these going to be newly hired teachers? Are the teachers comfortable with digital content? Are the teachers familiar with small group instruction or is lecture primarily practiced?

Instructional Model: The instructional model is often where the most time is spent deliberating on the key components and details of execution. How are lesson plans created? Where are application and higher-order thinking skills learned? How will data be used to guide instruction?

Efficiency: With extended budget cuts, schools often struggle with maximizing their current resources. Many blended learning models help support larger class sizes and create efficiencies around data collection.

Assessments: The use of digital content doesn't eliminate the need for other types of assessments. Many content providers have embedded assessments in each lesson. However, these assessments may not test for what is being taught nor necessarily cover all the materials required by the state. What types of formative and summative assessments should be implemented, including nationally normed assessments?

Content: Deciding on the array of available content can be time consuming. In fact, we recommend the use of a rubric specifically for content. There are hundreds of providers with solutions of varying degrees of completeness and comprehensiveness. Some are adaptive, some have game mechanics, and some are integrated to formative assessment systems. With all of these choices, it is difficult to determine which will work best for the school. Some of the basic decisions include: What subjects are needed for the instructional model? Use digital content that is more drill-based or provides more instruction?

Policy: There will be state-specific policy constraints to consider, such as highly qualified teachers, seat-time, and line of sight. Most states have specific regulations about how much time students need to spend sitting in the classroom in order to earn credit. These regulations need to be considered for schools that are looking to provide more flexible learning options for students who may not be spending their time sitting in a classroom. Additionally, other states have laws mandating that teachers must visually see all students at all times and as such, room layouts and computer station placements need to take these policies into account.

Technology: The discussion around computing platforms—such as tablets, laptops, or desktops and Mac versus Windows—can be involved and intense. Other factors to consider include wireless capabilities in the building, network bandwidth and infrastructure, security and acceptable use policies, and student-

computer ratios. As schools consider these models for secondary grade levels, more opt for 1:1 computing, usually requiring wireless access and laptops.

Other Factors: There are several other factors to consider, but implementation risk and startup costs are key ones to think about. Implementation risk will vary, depending on some of the other rubric tiles. Are there dependencies on construction? Is there suitable bandwidth at a low cost that can be delivered to the site? Also, startup costs are influenced by the cost of additional computers.

What is the Best Content for My Blended Learning Environment?

Every school administration we meet with asks "What is the best content for my blended learning environment?" It seems that there would be an obvious choice. Unfortunately, today that is not the case. There are dozens of different content providers, some trying to pioneer new sciences to provide math instruction, while others seek to make the content available for free. There is no one provider that has content for all grade levels, all subjects, and in multiple learning modalities, that is engaging for all levels and demographics. So, the best suggestion is to consider all options and determine what meets the needs of the school. Most of the blended learning schools implemented today are using three or more content vendors. In general, schools use a core math provider, a supplemental math provider (only because there are so many options), an English language arts provider, and providers of science and foreign language content. There are very few options for foreign language, science, and social studies, especially in the lower grade levels. However, most digital content provides some level of adaptability, allowing for differentiation and individualization of learning. Figure 2-10 shows the continuum of program adaptability.

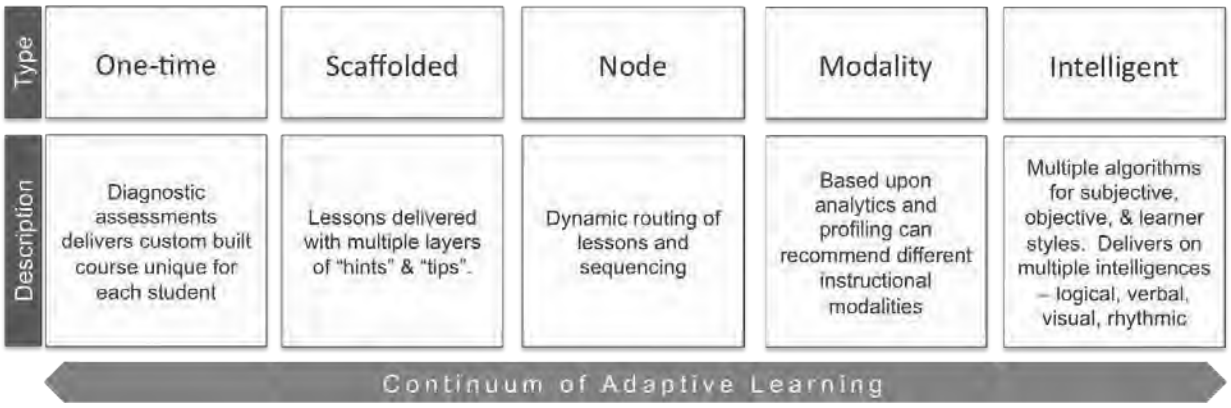

Figure 2-10 Continuum of program adaptability

The first step is to determine which of the content options works best for the school. Schools are inundated by sales people promoting their solutions to the school's academic problems. There are buzzwords like adaptive, RTI, games, and individualization. Ultimately, the school administration should make the most educated decision, keeping in mind what are the key non-negotiables when determining which content provider to select. Some of these criteria may include:

- Will web-based products be used exclusively? This decision is influenced by whether the school has appropriate bandwidth for web-based products.
- How important is adaptive content or guiding students through each standard?
- How many hours of instruction are available in the content? If students are going to use the math program for 30 minutes a day, every day for 180 days, 90 hours of content will be needed.

Regardless of which content providers are selected, if the school doesn't actively engage students, based on the data generated from using digital content and leveraging the power of daily assessments, the impact of this significant investment in digital content is almost guaranteed to be minimal. The system is providing the teacher with a diagnosis, but the teacher needs to do something about it. Or put another way, the content and the instructional impact of it is only as good as the data teachers receive and what they do with the data.

After the content is implemented, and each content provider has invested heavily in creating reports for teachers, a new set of challenges and questions need to be addressed.

How much teacher training is required?

Answer: *Ideally very little up front, but blended learning may require on-going development. If a school is already practicing small group instruction, which is common in elementary grades, the blended learning approach may be easier. However, if the small group instructional approach is not common in the school, the transition will require professional development to increase teacher effectiveness with small group instruction. Other important changes include classroom management, differentiating lesson plans, and developing a culture of data use.*

How does a teacher align lesson plans to what a student is doing online?

Answer: *A teacher will not align lesson plans to exactly what each student is doing online; however, there is a great degree of customization with each content source, and students' online experience could be connected thematically to their classroom learning. In particular, in the areas of science and social studies, the online content would align with the areas of study, though the students would be able to work toward mastery of the core concepts at their own pace.*

Do teachers need to be tech savvy?

Answer: *This depends on the chosen content providers and how the model is implemented. Simpler is usually better in the beginning. Teachers shouldn't have to manage settings or materials in the systems.*

Will teachers need to pull reports and analyze data for each student in multiple instructional systems?

Answer: *No. Schools need to include a reporting system, which integrates the data for easy access, or they will hire a data champion, who can pull the reports and review the data with the teachers.*

What are teachers doing if the computer is providing the instruction?

Answer: *Differentiation, teaching higher-order thinking skills, application of concepts, and teaching in engaging ways are all teacher responsibilities. Figure 2-11 illustrates how all levels of Bloom's Taxonomy (Anderson & Krathwohl, 2001) can be effectively met in blended learning classrooms. The digital content provides foundational skills, such as remembering and understanding, and the project-based and teacher-guided stations move student learning up the pyramid to applying and evaluating and creating.*

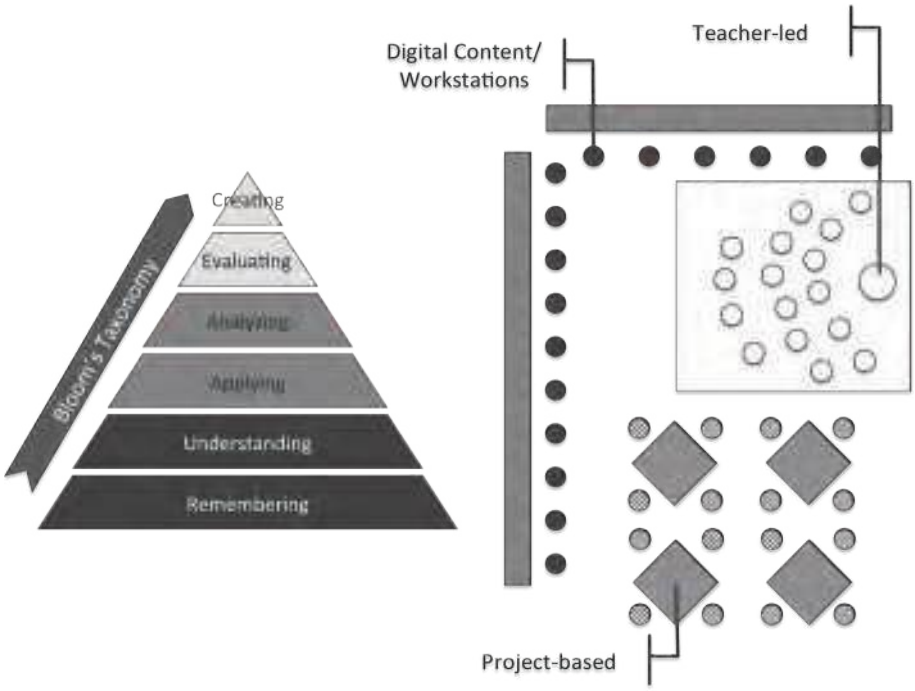

Figure 2-11 The Bloom's Taxonomy model is aligned to a classroom rotation blended learning model.

The Possibilities

In the end, schools utilizing one of the blended learning models still need effective school leaders and teachers, a strong school culture, and engaged students and parents. However, what if by leveraging technology we could create an environment to optimize the opportunities for focused small group instruction, make it easier for teachers to manage this environment, give them the tools they need to be highly efficient, and engage students so they are interested in their learning. In an environment of increasing class sizes and tighter budgets, blended learning might be the only way we can truly provide students with differentiated instruction and a quality learning and teaching environment.

About Education Elements

Working with charter management organizations, school districts, private schools, and foundations, Education Elements has pioneered new approaches to blended learning. Education Elements helps schools take advantage of adaptive digital content and assessments to tailor instruction and maximize learning for students, and give teachers the tools they need to differentiate small group instruction. Today, Education Elements advises schools and school systems on the potential of blended learning, works side-by-side with them to implement blended learning in their classrooms, and provides a technology platform (the Hybrid Learning Management System) that makes it easy and effective for leaders, teachers, and students to bring blended learning into their schools.

About the Authors

Anthony Kim is the CEO and founder of Education Elements, a blended learning technology company he created in 2010. A seasoned entrepreneur, Anthony also founded and led Provost Systems, a provider of software and services for operating online schools, where he worked with K–12, post-secondary and Department of Defense institutions to support innovation in instructional delivery and instructional technology. After selling Provost Systems to EdisonLearning (formerly Edison Schools) in 2008, Anthony served as Executive Vice President of Online at EdisonLearning until 2010, building out its newly formed online business unit. Anthony graduated from Cornell University and has served as an advisor to several software companies.

Michael Thompson is the director of school programs at Education Elements, where he is responsible for school partnerships, implementations, and instructional models. Prior to joining Education Elements, Michael was a longtime educator who served as assistant head of school and then head of the middle school campus for the Keys School, an independent K–8 school that offers a broad hands-on curriculum, where he had previously been director of technology. Michael has a masters' degree in education from Stanford University and a BA from Carleton College.

SECTION TWO

School System Program

CHAPTER

3

Virtual School Program Lays the Foundation for System Redesign in a Public K–12 School District in California

David Haglund, Ed.D., Director, Educational Options for Riverside Unified School District
Principal, Riverside Virtual School

RUSD
Innovation in Education
RIVERSIDE
Unified School District

Riverside Virtual School

Riverside Virtual School (RVS) is a tuition-free, public school that offers high-quality, interactive online classes for students in Southern California. Housed within Riverside Unified School District, RVS students benefit from the flexibility that online learning provides, including opportunities for course acceleration, unique enrichment programs, online mentors, and access to learning 24 hours per day, seven days per week.

All RVS courses meet the entrance requirements for the University of California, and each AP course has received approval from the College Board. Many courses incorporate face-to-face learning sessions, including wet labs in all science courses. It is the mission of RVS to provide a rigorous, college-preparatory online school program that meets the needs of 21st century learners, preparing graduates for successful careers in a competitive global marketplace. This includes opportunities for accelerated learning, Advanced Placement courses, and credit recovery.

Context

Although RVS is a fully accredited public school, the program remains a viable option for homeschooling families that desire to increase the level of rigor of the curriculum available to their students, while maintaining control of the physical learning environment. An increasing number of families are considering alternatives to traditional classroom-based instruction for meeting the learning needs of their students. RVS welcomes students throughout Southern California, offering courses that meet the learning objectives identified by the State Board of Education in California public schools. Riverside Virtual School supports parental choice, while providing access to a rigorous, standards-based, college-preparatory curriculum in grades 3-12 and has become a school of choice for families that have pursued homeschooling options. The unique blended learning environment experienced by RVS students also provides access to experiential school activities such as performance and fine arts programs, school-based athletics, links to institutions of higher learning, and community mentor programs.

Developing partnerships between the Riverside Unified School District and other districts in California are beginning to expand access to high-quality online courses for students in rural schools of the state. Innovative leadership and planning allows school districts to offer increased access to online learning resources in traditional face-to-face classrooms, as well as provide a complete curriculum in grades 3-12 for homeschooled students. The formation of active partnerships among districts throughout the state is facilitating each district's ability to do the same within their attendance boundaries.

Overview

Riverside Virtual School and Riverside Unified School District

Riverside Virtual School (RVS) is the newest high school in Riverside Unified School District (RUSD) and the first online school program serving students throughout the city of Riverside. RUSD is the fifteenth largest school district in the state, covering 92 square miles with a highly diverse student population of 43,000, speaking 37 different languages. The 49 schools in RUSD include 5 comprehensive high schools, 7 middle schools, 31 elementary schools, 5 alternative education schools, and the largest adult education school in the county. RVS draws students into two distinct programs: a growing full-time program that accepts students in grades 3-12 and a significant concurrent enrollment program that provides access to online learning opportunities for students throughout and beyond RUSD.

RVS started in 2005 with the idea to explore online learning possibilities and then incorporated as a pilot program in the district's Technology Use Plan in 2006. The first online classes (Advanced Placement Statistics and Advanced Placement American Government) were piloted in the fall of 2006, and the RUSD Board of Education formally adopted the comprehensive school program in 2007. That year, the school opened classes for students in grades 9 and 10, expanded to grades 11 and 12 the following year, and middle school courses began in the fall of the 2009. The school now serves full-time students in grades 3-12 and offers supplemental courses to concurrently enrolled students in grades 6-12.

The mission of RVS is to provide access to a college-preparatory, blended learning program that meets the needs of 21st century learners and prepares graduates for careers in a competitive global marketplace. RVS course enrollment exceeded 3,600 in 2010, including learners who are being home-schooled, seeking Advanced Placement (AP) courses not offered at their home high school, needing course remediation, and/or desiring to accelerate through the high school curriculum and begin attending college. In 2010, RVS provided a foundation for RUSD's efforts to expand student access to courses that combine the best of traditional and virtual learning experiences. Over 14,000 RUSD students participated in at least one course that met blended learning criteria during the program's initial implementation year (2010–2011).

Creating a Virtual School vs. a Digital Arm of Riverside Unified School District?

RUSD has spent the better part of five years developing a curricular program that integrates virtual and face-to-face instruction in both online and traditional school environments. The focus of the effort has been to build digital curricular resources that are accessible without regard to classroom structure. Our goal is to differentiate the instructional delivery method of our curriculum, not to deploy a new curriculum, which is common in districts where online content is purchased outright. This process has supported alignment of curriculum accessible to students in both traditional and virtual learning environments, including common textbooks, learning objectives, assessments, and course mapping guides. Consequently, students can transition between on-site and online courses as fluidly as if they had moved from Teacher A to Teacher B on campus to adjust for scheduling issues. It certainly would have been quicker and easier to buy a curriculum or bring in an outside vendor partner. However, we would have regretted the lack of flexibility and loss of interoperability between the two learning environments.

One example of how this curriculum alignment has helped the district better serve students is found in how traditionally difficult-to-staff or difficult-to-fill Advanced Placement (AP) courses are managed. In late September each year, high schools adjust master schedules based on student enrollment and teacher allocations. It is not uncommon for this process to result in closing AP class sections. It is just not efficient, given today's budgetary environment, to staff a class of seven students at each school. RUSD has leveraged the virtual school as a means to facilitate important classes that are sometimes subject to lower enrollment. With 6 students from High School A, 9 students from High School B, and 4 or 5 students from each of the other schools, the group of 27–30 students can participate in the course together online.

A Variety of Course Types and Learner Experiences

RUSD has deployed two virtual course models that are available at comprehensive schools throughout the district. These include fully online courses in which teachers and students interact primarily through electronic means and blended learning courses where teachers and students interact with virtual learning objects, both within and beyond the school day, as part of instruction conducted within the traditional face-to-face program. Each type of course can be offered through the local school or accessed via concurrent or full-time enrollment at RVS. Similar enrollment opportunities at RVS have been made available to students in other school districts by way of partnership agreements between districts. This expanding collaboration is at the heart of the California Open Campus Initiative, a federally supported program designed to expand access to online courses.

The introduction of information technologies into virtually every aspect of our lives is leading educational leaders, parents, and students in Riverside to think differently about where and how learning takes place. Traditional concepts of schools, classrooms, and learning are being reconsidered as emerging technologies introduce new ideas and capabilities into the system. Beyond the school walls, the market is demanding a new set of skills from graduates—skills that school systems have not widely incorporated into the curriculum. At the same time, the rate of change relating to information and communication technologies makes identifying the specific skill set difficult to articulate, let alone plan for. From our perspective, this change is being driven by several factors (see Figure 3-1).

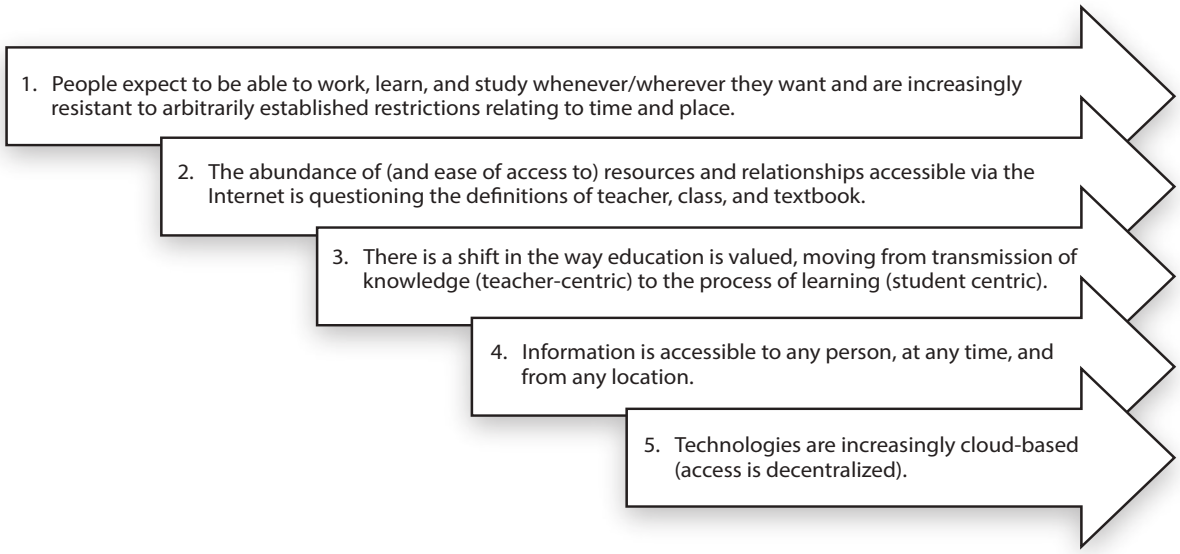

Figure 3-1 Forces driving RUSD efforts

These forces are driving RUSD efforts to transform classrooms into environments that promote global awareness, active learning, critical thinking, collaboration, complex problem solving, and knowledge creation. The role of the teacher in this process and the transmission of academic skills and content-area knowledge become even more critical. Teachers must be able to use multiple teaching and learning tools and strategies to ensure that students have

mastered academic objectives, while at the same time helping students develop an evolving skill set relating to information and communication technologies found in the 21st century job market. We acknowledge this changing environment and have begun the process of transformation that is reaching across our organization and into the homes of our students. Our work is changing to reflect the understanding that we live in a different world (i.e., reality, era, environment) than we grew up in, one in which digital natives depend on digital immigrants to understand their emerging learning styles and personal academic needs.

To be effective in this environment, children must develop and master a set of functional and critical thinking skills that are unfamiliar to many teachers in classrooms. Even the structures that have guided development of school and family schedules have become increasingly more irrelevant for and disconnected from learning. Businesses are seeking graduates with a set of skills that are not easily integrated into established curriculum pathways and pacing scenarios. We acknowledge that students are learning many of these skills via personal learning and social networks outside of school, bringing into question the relevance of schooling in its current form.

In May 2009, the U.S. Department of Education released a meta-analysis of effectiveness studies of online, face-to-face, and blended learning models. The analysis found that, while online learning produced slightly better student outcomes than face-to-face classes, blended learning offered an even larger advantage over traditional face-to-face instruction when comparing student learning outcomes. As we prepared to draft the 2011–2016 RUSD Technology Use Plan, vision shaping activities included the review and consideration of five goals articulated in the U.S. Department of Education's 2010 National Technology Plan, *Transforming American Education: Learning Empowered by Technology.*

1. All learners will have engaging and empowering learning experiences, both inside and outside of school, that prepare them to be active, creative, knowledgeable, and ethical participants in our globally networked society.

2. Our education system, at all levels, will leverage the power of technology to measure what matters and use assessment data for continuous improvement.

3. Professional educators will be supported individually and in teams by technology that connects them to data, content, resources, expertise, and learning experiences that enable and inspire more effective teaching for all learners.

4. All students and educators will have access to a comprehensive infrastructure for learning where and when they need it.

5. Our education system, at all levels, will redesign processes and structures to take advantage of the power of technology to improve learning outcomes while making more efficient use of time, money, and staff.

Ultimately, educational leaders must develop learning programs that result in better learning outcomes for each student, and we must provide it at a competitive price . . . or someone else will. To achieve these ends, our only alternative is to fundamentally change the system. In Riverside, the vision is clearly articulated

within the newly adopted Technology Use Plan and began with the creation of a learning platform that served as the foundation for Riverside Virtual School.

The Development and Accreditation of Riverside Virtual School

RUSD's Board of Education founded RVS in June of 2007. The program is housed at the Educational Options Center (EOC) and is overseen by the Director of Educational Options. Because RVS is a blended-model school, students regularly visit campus (as well as other locations throughout the district) in order to participate in hands-on science labs, physical education activities, art workshops, study groups, and other high-touch activities. Full-time RVS students also may engage in performance and fine arts courses and/or athletics programs at comprehensive high schools in the district. The learning program at RVS blends virtual and hands-on experiences in order to offer students a variety of ways to access the curricular program and to ensure a rigorous and personally relevant learning experience.

From a logistical standpoint, there was a fairly complex landscape set before the team creating the virtual school. Stakeholders needed to focus on program implementation and delivery of online curriculum while addressing accountability measures designed for traditional learning environments. The RVS Steering Committee was established to support program development and evaluation and includes individuals from RUSD administration, the local business community, parents, and faculty from the University of California (UC) and California State University (CSU). The Steering Committee has been instrumental in the continuous improvement process that supports efforts to maintain a nimble footing in the blended learning space and encourage innovation that is tied to emerging best practices in the field. The RVS staff, steering committee, and leadership are fully vested in promoting the school's mission.

> *Riverside Virtual School's mission is to provide a rigorous, college-preparatory online school program that meets the needs of 21st century learners and to prepare graduates for successful careers in a competitive global marketplace.*

Guided by the mission, the leadership has taken a structured analytical approach to program evaluation and enhancement of student-learning opportunities to meet each student's educational goals. The College Board, the University of California, and National Collegiate Athletics Association (NCAA) have each reviewed the program and accepted courses taken by both full-time and concurrently enrolled students. The school is fully accredited by the Western Association of Schools and Colleges (WASC). In 2010, RVS beat the state target for academic performance, achieving an Academic Performance Indicator (API) score of 819 (out of a maximum score of 1,000) from the California Department of Education. This positioned RVS at the top among high schools in RUSD and one of the only virtual schools in California to beat the state target of 800.

Riverside's 2011–2016 Technology Use Plan: Vision 2020

The unique nature of the RVS program has supported system-wide change in RUSD and paved the way for wide-scale adoption of blended learning. When we began dialogue with

our superintendent about updating the district's technology plan for 2010, we worked to get our heads and hands around issues on the horizon and established a vision to move the organization in a new direction. The committee tasked with writing the document quickly determined that the plan needed to initiate a significant shift within the system. By its nature, the new vision would require schools to approach change in very different ways than they were accustomed to and with very open minds. Figure 3-2 represents some of the notions we considered in describing shifts within the change at hand.

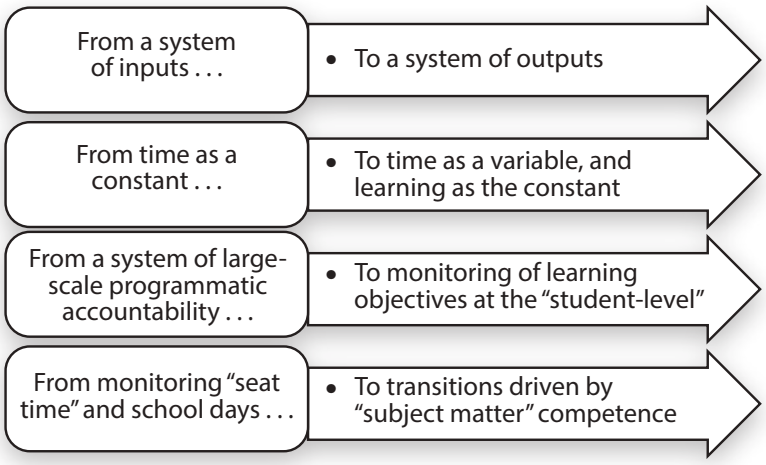

Figure 3-2 Some of the notions used in the RUSD Shift.

While these ideals are reflective of the new thinking emerging as district-wide conversations, it is important to consider the impact that the RVS program has had in terms of setting the stage for change. Because the curricular program was supportive of and aligned to district and state standards and incorporated district-wide pacing and assessment components—as opposed to vendor-supplied content without ties to district curriculum objectives—the sharing of digital content was facilitated from day one. The parity between the two curriculum programs facilitated rapid adoption of online courses as solutions to scheduling conflicts on the comprehensive school campuses and established a pathway for students to accelerate their learning and cross existing school and grade-level lines.

Program Description and Alignment to District Priorities

RVS is a unique academic program that provides students access to a rigorous curriculum distributed in both online and traditional learning venues. Full-time RVS students participate in individual, small group, and large group learning experiences that are supportive of individual student learning objectives. This "high-tech/high-touch" approach ensures that students are engaged in purposeful learning experiences on campus where warranted and are free to move through online content at their own pace. Because this blended learning environment is a developing model, teachers are selected from among the best and brightest RUSD has to offer. The unique staffing strategies ensure that teachers maintain a foothold in the traditional classroom, while gaining experience teaching in the blended and online learning environments. Teachers typically join the RVS

staff in a part-time capacity while they gain experience teaching online. Once teachers have demonstrated a capacity for working in the virtual learning environment, they are provided increased levels of interaction with students in the school program.

Each RVS teacher is provided with the technologies and training necessary to support effective instruction and student learning. All online courses are built to mirror those in the traditional classrooms, including alignment to grade-level and/or content-area mapping guides, common assessments, and Board-adopted resources. At the same time, RVS courses leverage the vast array of digital resources available via the Internet, as well as teaching and learning strategies that research has established as best practices in virtual learning enviroments. The ubiquitous nature of online learning allows students to engage in ongoing academic discourse with the teacher and fellow students. Courses focus on mastery learning, individual and collaborative projects, and problem-based learning experiences. The tight alignment between the RVS and RUSD curricular programs has enabled teachers to use online course content to support instruction in their face-to-face classes on comprehensive school campuses. This practice has contributed to a district-wide move toward blended learning.

In RUSD, the expansion of blended learning—in both traditional and online instructional spaces—is being fueled by three main factors:

- The digital content repository that houses the curriculum for RVS contains learning resources that are tightly aligned to state standards and district pacing and assessment blueprints;
- The district's innovative technology use plan that is challenging established structural and cognitive barriers to change; and
- District policies that support open access and allow students to bring their own devices onto campus for use within the learning environment.

Student Enrollment and Access to the RVS Online Course Repository

All middle and high school students in RUSD are provided access to enrollment opportunities in RVS courses. The district's general fund fully supports the costs of concurrent enrollment. This supplemental enrollment program has resulted in a steady increase in course enrollments from 285 course enrollments in 2007 to well over 3,600 course enrollments in 2010. As enrollment data reflecting blended learning classrooms using the RVS learning and content management system was added this past school year (2010–2011), enrollment spiked to over 14,000. In July of 2011, all RUSD teachers, students, and parents were provided access to the RVS content system as part of our initiative to increase the use of blended learning at the district's comprehensive schools. The data suggest a possible change in the trajectory of enrollment in fully online courses as more blended learning opportunities are made available on campus (see Figure 3-3). We will be watching these numbers to determine how best to meet student needs in Riverside.

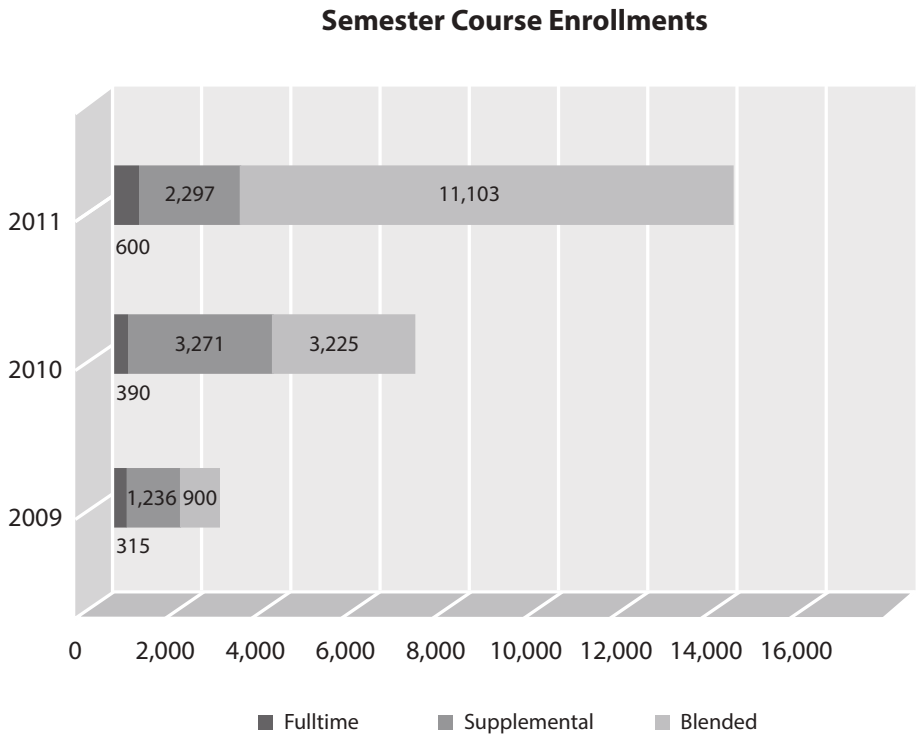

Figure 3-3 Semester course enrollments at RUSD.

RUSD teachers and curriculum specialists have collaborated to align content both vertically and horizontally to ensure effective sequencing and pacing within the RUSD course of study. RVS courses are highly differentiated and incorporate Expected Schoolwide Learning Results (ESLRs) as points of emphasis tied to specific course outcomes. The RVS vision and mission statements clearly articulate a college-going expectation for students. Students can access courses anytime, and learning management system usage data show that they make good use of this flexibility. Teachers are available on-site and online during the traditional school day and also during after-school office hours. Work Study tutors from the University of California, Riverside, are also available to students on-site (in learning labs) and online (utilizing video and voice conferencing tools) to support student learning.

The RVS course list includes most courses identified in RUSD's comprehensive course catalog. It contains the courseload required to meet RUSD graduation requirements, including University of California "a-g" courses, as well as honors and AP classes. In cases where specific courses are not available to students online (e.g., certain fine arts classes, CTE, or athletics programs), concurrent enrollment is supported and encouraged at either a local comprehensive high school or Riverside Community College. The RVS Steering Committee is developing plans to offer an early college program that will integrate opportunities for students to pursue career technical pathways at the community college and/or early enrollment in science, technology, engineering, and math (STEM) courses at local CSU and UC campuses.

Online Course Standards Established by External Organizations

I want to be an engineer and my school offers 6 engineering classes. I didn't have enough room in my schedule to take all the classes this year and next year. I decided to take an online class so that I can still get all my necessary credits and be able to do the engineering classes as well.

— RVS Student

I'm a senior in AVID (Advancement via Individual Determination). I didn't have room in my schedule to take health because I wanted to add some more Spanish AP classes to get them over with. I do learn better on my own.

— RVS Student

While each course was developed to meet district and state standards, other relevant guidelines also were attended to in order to ensure that graduates were not disadvantaged in any way. For example, the University of California only accepts online science courses that contain significant wet-lab components. That same science course would only clear the NCAA review process if the course were paced to ensure a depth of learning and incorporated proctored unit exams. Courses that are currently in development are becoming increasingly blended to ensure that students have sufficient exposure to resources to master course objectives, while experiencing the relevant high-touch activities that address UC and NCAA concerns.

This blended learning environment is an expansion area for RVS and one way in which the online program feeds back into the traditional classrooms at the district's comprehensive schools. As courses have been retrofitted to address the criteria outlined in UC and NCAA policies, the fit with traditional classroom instruction has been significantly enhanced. This has led to an increasing number of RUSD teachers using the RVS learning and content management system as a support for classroom-based instruction.

Who Are RVS Students and What Motivates Their Enrollment?

There continues to be a diverse representation of students accessing online courses, including those seeking to recover credits due to previous course failure, some attempting to improve grades for college, others trying to mitigate an impacted class schedule, and students looking to accelerate through school and enter college at an earlier age.

Three growing enrollment trends at RVS are evident. First, students want to enroll in courses that were overfilled or unavailable on their comprehensive school campus. Second, students uninterested in or challenged by the social drama at school, which impacts their ability to stay focused on academic objectives, were attracted to RVS. Third, homeschooled students and their parents want to supplement schooling with access to content-area experts in math and science. Sustaining a solid foundation of well-designed curriculum and effective instructional practices has allowed RVS to develop a program that addresses the needs of multiple constituency groups.

Characteristics of Full-time RVS Students

Students who pursue full-time enrollment commonly access online programs because of the flexibility that a personalized schedule provides. This student subgroup is largely made up of highly motivated individuals who are involved in professional and/or competitive activities that occur during the traditional school day or at some distance from home.

Full-time online students commonly evidence a great deal of independence and self-discipline, coupled with motivation to complete the online course and meet teacher expectations. Students consistently report that online courses may seem to be more demanding than courses they have previously engaged in on campus. They speak to the lack of the physical teacher presence: the adult standing in front of the students, holding them accountable for fulfilling course objectives. Students must be able to internalize a teacher voice and keep themselves on task. This is a motivation factor that sometimes poses a challenge for students as they transition to a more independent and self-directed learning environment.

In the traditional school setting, students have teachers in front of them during instructional time. However, if students are not given the attention they need during that time (e.g., replying to student questions or addressing disengagement), learning becomes a challenge for students not able to navigate content and/or proceed without individual support. In these situations, the online learning environment has an advantage. Student surveys consistently indicate that they experience more individualized attention from their online teachers than they have experienced in traditional classrooms. While this initially seems counterintuitive, practitioners in the virtual school environment can attest to the high levels of student-to-teacher communication on a one-on-one level.

My educational goals "go above" the traditional classroom. A public school is limited and does not provide me with the ability to excel, which is my main goal.

— RVS Student

Online courses help me achieve my educational goals because they give me the opportunity to move ahead in areas where I am confident; in the traditional classroom I'd have to go at the same pace as everyone else.

— RVS Student

If a student doesn't turn in an assignment, they can't hide in my online class. I know exactly who didn't do the discussion board . . . I know who exactly is struggling with the rough draft. I actually have more interaction with my online kids. I know them better, which seems strange, at first.

— RVS Teacher

Supporting Students New to Online and Blended Learning

To support students during their transition to online and blended learning, RVS provides newly enrolled students with a hands-on orientation that demonstrates how to navigate an online course and how to communicate with teachers and support providers. This practice provides students—with all levels of technological expertise—the opportunity to become oriented to an online course in a low-risk situation and to develop some level of comfort with the tools found in the environment. The activities contained in the orientation are intended to give students an experience similar to what they would have in a credit-bearing course. This includes a self-assessment designed to help students evaluate their natural fit with online learning and to manage expectations. Results from the assessment provide students and teachers with data identifying the student's learner type/style and helps parents and/or counselors make informed choices. Table 3-1 shows a sample 11th grade student schedule.

Table 3-1 Sample student weekly schedule

Sample student weekly schedule					
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Morning	Meet w/Lead Teacher	Foreign Language Lab	AP History Workshop	Foreign Language Lab	Work at Home
Mid-morning	Cisco Academy Lab	Community College Class	English Workshop	Community College Class	Math Lab
Early Afternoon	Work at Home	City Internship	AP Environmental Science Lab	City Internship	Work at Home
Afternoon	Football Practice	Football Practice	Football Practice	Football Practice	Football Practice
Early Evening	Football Practice	Free Time	Football Practice	Free Time	Football Game

The online courses have helped me because when I don't understand something, I know that I'm able to ask for help right away, and they'll do whatever it takes to make sure I fully understand it. With traditional schooling, from what I have experienced, it's rare when a teacher actually takes the time to sit down and talk with you about the material that you're taking.

— RVS Student

Virtual learning environments also lend themselves to higher levels of individualization and differentiation within the learning process. Customized learning pathways, increased individualized instruction, and differentiated course requirements each support Howard Gardner's theory of Multiple Intelligences. This model gives students a foundation for success and lessens the anxiety common in more rigid, group-oriented learning environments.

The Riverside Virtual School and Summit View Independent Study are both housed on the Educational Options Center (EOC) and were the first programs in the district to move into the blended learning space. Students work with their advisory teacher and parent(s) to determine how best to construct their school experience and ensure success. This can include scheduled time on campus, at a local comprehensive school, or at the community college. Figures 3-4 and 3-5 demonstrate how space at EOC has been allocated to support blended learning. EOC students enroll in courses that have been designed to leverage virtual and hands-on learning in ways that promote learner choice and engagement. These courses allow students to fit occasional, purposeful class time into their schedule, while completing most of the coursework online. Note the designated lab spaces in the school maps below.

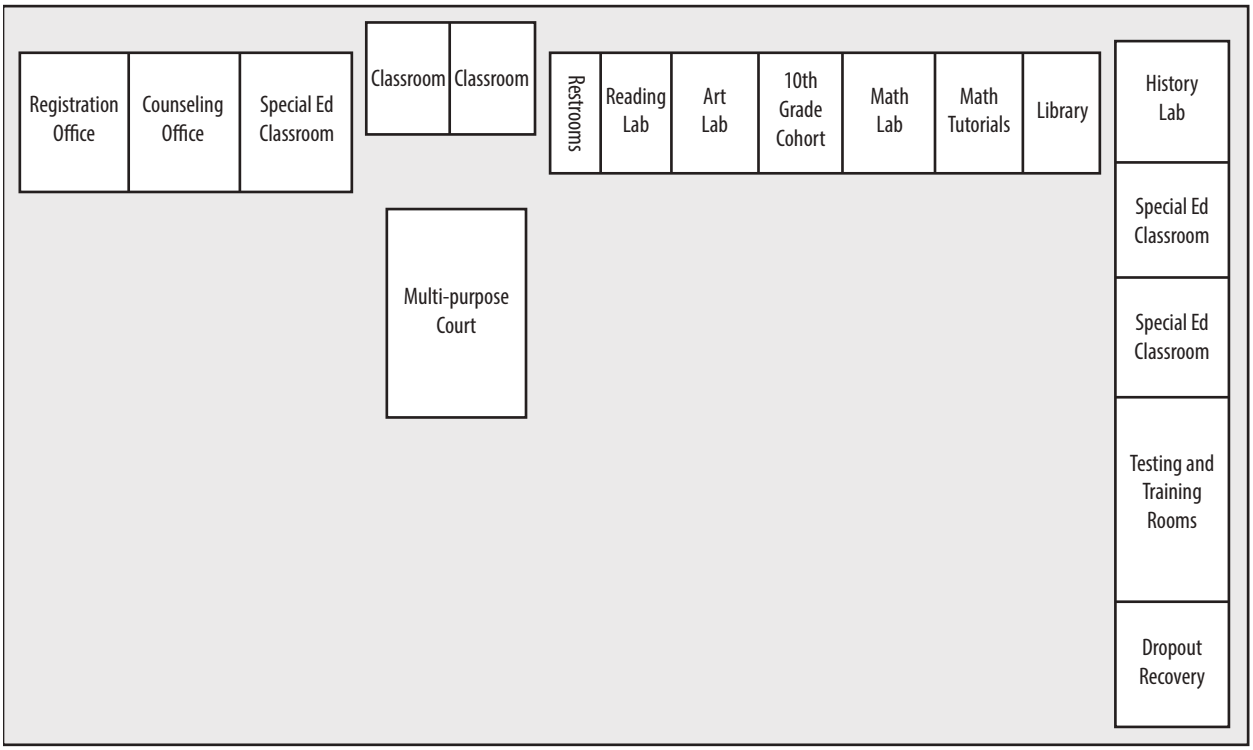

Figure 3-4 Educational Options Center, East Campus

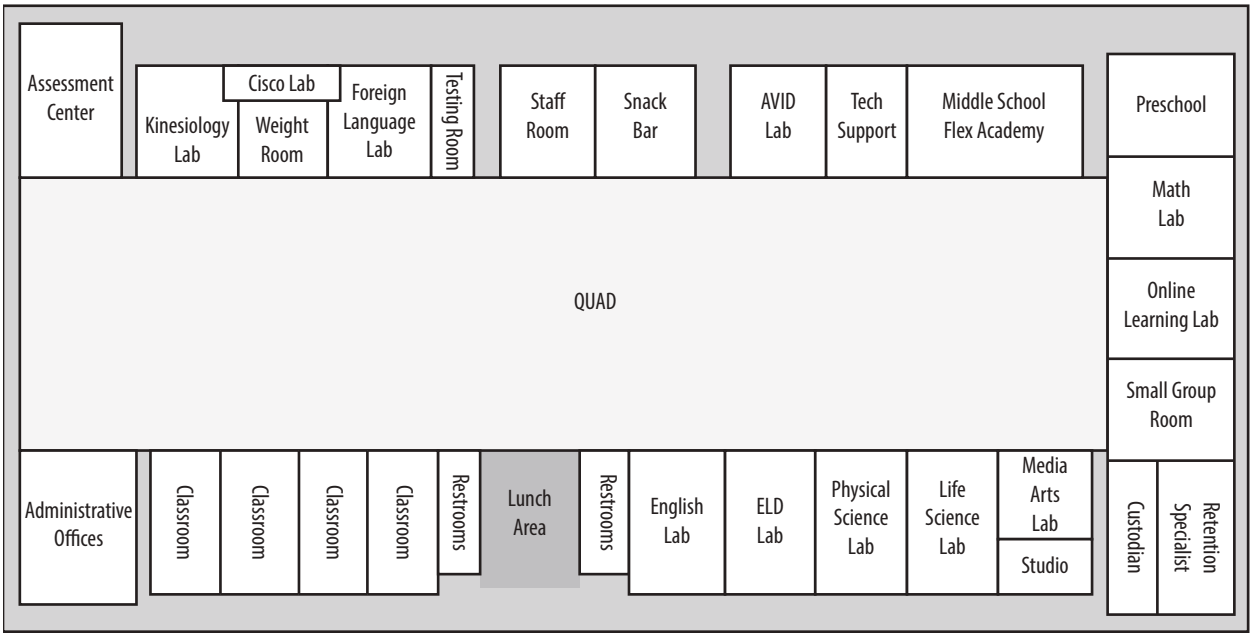

Figure 3-5 Educational Options Center, West Campus

Teachers bring students together only where and when needed. For example, chemistry and biology courses require students to perform experiments in a physical laboratory, while related reading, writing, and discussion assignments are completed online.

RUSD has defined blended learning as an instructional model that combines traditional instructional delivery with strategies supported by technology both inside and outside of the classroom. Research indicates that blended learning increases both the quality and the quantity of human interaction in school by offering students the opportunity to learn both together and apart without the constraints common to traditional school environments. A community of learners can interact at any time and from almost any location. RVS courses provide a good mix of technologies and interactions, which we believe results in a socially supported, constructive learning experience that has a profound effect on student learning.

Bidirectional Concurrent Enrollment

For full-time RVS students, a blended program might include more than just the instructional strategies used in particular courses. Students sometimes want to increase their exposure to typical site-based programs—activities uncommon at many virtual schools. California education code and RUSD policy provide the mechanism for students enrolled in independent study programs to participate in activities at the local comprehensive schools. The RVS administration facilitates student requests, as appropriate, to ensure student participation in activities of choice. This includes opportunities for concurrent enrollment at RUSD high schools and Riverside Community College and/or participation in extracurricular activities not available on the RVS campus. Students who desire to participate in fine arts programs (e.g., dance, orchestra, marching band) are provided access to both college- and high-school-level programs. The emerging School for the Arts at Riverside Community College will provide unique opportunities for concurrent enrollment as RVS students access fine arts courses that meet UC and CSU entrance requirements.

Student athletes may participate in California Interscholastic Federation (CIF) sports through concurrent enrollment in their neighborhood high school. Currently, several RVS students participate in varsity-level sports at local comprehensive high schools. These opportunities have been welcomed by homeschooling families, in particular, as they seek ways to support their students as they enter the more socially active high school age.

Curriculum Development

RVS curriculum has been developed in alignment with the California Content Standards and with support from the Instructional Services Division of RUSD. While vendor and publisher content is sometimes used in RVS courses, how and if specific content is incorporated is determined by the course designers at the learning-object level. Whole course products are rarely used out of the box. This is typically due to what we have determined as weak alignment to California standards and/or district curriculum objectives. As a whole, "packaged" curriculum challenges RUSD's efforts to bridge the space between seat-based and online courses. Our adherence to this stance has greatly enabled a district-wide drive to increase the use of blended learning at the comprehensive schools. Specific course content has been secured via several means, including:

- Publishers of district-adopted texts such as Holt, Pearson, and Houghton Mifflin
- Online course developers/vendors such as University of California College Prep, Florida Virtual School, Pearson Digital Learning, and Aventa
- Open resources such as Khan Academy, Massachusetts Institute of Technology, Hippocampus, and National Repository of Online Content
- RVS and RUSD curriculum designers

Vendor partners were selected through a variety of processes, including teacher and student review and piloting with a small group of students. In every case, we looked to determine whether the content was tightly aligned to state standards and/or supported reconstruction of learning objects. We have found very few off-the-shelf products that are complete when compared to district and state standards. In most cases, significant effort to realign vendor content is necessary to build courses that reflect RUSD curriculum standards. This has pushed RVS staff toward the creation of courses using multiple resources, including both purchased and open source materials. As a blended learning program, teachers commonly collect resources that will support instruction in both their traditional and online classrooms.

Our initial instructional faculty was eager to be challenged and embraced the steep learning curve experienced by most teachers who transition from the traditional classroom into the virtual learning environment. Each was willing to try new modes of instruction and allow students the opportunity to inform staff awareness about how 21st century learners learn best. Teachers were quick to develop new skill sets and adopt an innovator's mindset as they approached their new responsibilities. Students also helped teachers learn the communication technologies that they use at home to communicate with their personal and learning networks. These practices would soon begin to reshape the RUSD instructional programs in both brick-and-mortar and online classrooms.

Professional Development at RVS

The initial stages of creating an online program required an investment in preparing highly qualified faculty to take on the challenge of assembling quality online courses. Faculty members hired to implement the vision of the RVS Steering Committee were provided professional development to assist their efforts to design and implement the curriculum. Follow-up coaching is needed to sustain efforts. Training includes time management skills to help teachers organize their work and pace curriculum. Teachers also learn to integrate strategies proven to draw high levels of student engagement and support high-quality interactions (e.g., student-to-teacher, student-to-student, and student-to-field expertise) in the virtual learning environment. One RVS math teacher said the following in reference to the RVS mentor assigned to her as she took on her first online course:

> *He was my guru! We shared a room and I would just sit and bug him about everything. It wasn't necessarily like formal training. But once you get into working on the computer all of these questions pop up like "How do I do this? How do I do that?" He was always there to help.*

Our use of experienced and effective RUSD teachers at the virtual school helped to facilitate transference of the rigorous curriculum program between the traditional classroom and

the virtual learning environment, specifically in terms of addressing state standards and integration of existing assessment processes. This new learning environment requires highly qualified instructors, those who are technologically savvy and are experts in their content area. Online teachers also need to be flexible with their time since students routinely make contact throughout the day and commonly at night or on weekends. Having the right people in place to design and deliver this new curriculum contributed to a more successful learning experience for students. It also laid the foundation for the district's shift toward blended learning by developing a standards-based content and course repository that is accessible to all RUSD staff. Teachers indicate that the transition from being a classroom teacher to an online instructor requires a great deal of time and energy. However, this investment of time contributes to the relationship with students and the learning context that students invest time in.

In 2012, Riverside Virtual School staff initiated the Teacher SandBox via the California Open Campus. This professional learning network for online and blended learning course teachers will extend through multiple California school districts as a means to support developing the capacity of instructional staff to work with digital tools and content. Activities will focus on instructional pedagogy and support teachers who are eager to incorporate virtual learning opportunities to extend learning beyond the school day.

Partnerships: The Key to Supporting Equity of Access

As RUSD continues to expand the use of cloud-based resources to support online and blended learning, it will be critical to maintain a device-agnostic position with regard to online file storage, collaborative student and staff work areas, and learning resources. New RUSD programs utilize iPads, iPods, NetBooks, tablet PCs, and various other devices and software. RUSD's "bring your own device" and open access policies have increased the number of student- and staff-owned devices on campus. The policies have enabled grant writers to secure resources for students/families who do not have computer and/or Internet technologies in the home. These policy shifts are critical for schools/districts desiring to move toward online and blended learning programs, which require access to digital resources from both school and home. Failure to attend to this issue could contribute to a growing achievement gap.

Low-income students who reside in the city of Riverside are referred to SmartRiverside's Digital Inclusion Program, which provides wireless computer resources for access to online learning resources. In cases where families do not qualify for this program or live outside of the city, they are informed of local, community-based programs (e.g., libraries, youth organizations, and community centers) with accessible computer resources. We are committed to working with local agencies to develop strategies for ensuring student access, including promotion of open access policies that encourage student use of personal learning devices brought from home and those checked out from school.

The collaborative relationship between RUSD and the city of Riverside is representative of a common belief that the quality of the city's workforce is directly tied to the educational programs of the schools. Together, we have identified and are leveraging multiple networks (wired and wireless) that are available to students, staff, and parents, including those maintained by the district and public utility companies. Increased infrastructure—including

hardware and software that routes traffic to and away from sensitive resources—has supported the expansion of the district's open access policies. In 2012, the city of Riverside was identified as the top Smart Community by the Intelligent Community Forum (ICF), an international think-tank dedicated to studying global social and economic development. The award announcement touted the innovative practices of the school district, and Riverside Virtual School in particular, as one of the key factors for awarding the prize.

Results

The University of Southern California Study and Identified Best Practices

The personalized learning environment that is provided to students at RVS was identified by a 2011 USC study as a best practice for working with students who require academic intervention to meet personal learning objectives. Other commendations in the study included the use of NCLB highly qualified faculty who work within a flexible, student-centered learning environment; the New Student Orientation (RVS Base Camp); the enhanced teacher-student relationships supported by relevant 21st century communication technologies; and the systemic consideration of and response to the socioeconomic status of students and its impact on student learning in the online environment.

It is our belief that both students experiencing their first online course and veterans of virtual learning environments require access to highly qualified, well-trained faculty to ensure student academic outcomes. When the RVS program started, 60 RUSD teachers voluntarily entered the Teaching in a Virtual Learning Environment training course. Since that time, over 200 staff members have completed the course. This includes many who work part-time for the RVS program, as well as those who are developing blended learning courses at the comprehensive schools in the district.

The Student-Teacher Relationship

There has been some debate about the quality and effectiveness of relationships between teachers and students in virtual courses. Some have suggested that online interaction is less beneficial than traditional face-to-face interactivity. Our experience tells us that the emergence of new communication devices, software, and online tools has actually produced stronger school-to-home communication and increased the frequency and quality of feedback between teachers and students. Even our concurrent online teachers (those who teach online and in the traditional classroom environment) report that teacher-student communication is more frequent and more productive than that which they experience in their brick-and-mortar classrooms. Likewise, student survey data indicate that online learners experience a higher rate of contact with online teachers than they do with teachers on their comprehensive school campus. Students email, text, and chat with their teachers without regard to the school's bell schedule. Survey data indicate that student feedback from online teachers is more personalized and specific than they are used to on

campus. Online teachers report that they feel substantially more aware of the needs of individual students in the online courses than those in their physical classes on campus.

The Challenge of Funding

> ***I just wanted to thank you and RVS for leading my son through geometry last year. I just got his CST scores. You may remember me telling you that he took geometry in 8th grade and scored Basic on the CST. When he retook the course under your direction in 9th grade, he scored at the Advanced level.***
>
> — RUSD Parent

One of the challenges faced by RUSD relates to the RVS program and the per-pupil allocation of state monies. As a largely supplemental program (courses taken in addition to a full academic schedule on campus), funding for the RVS program has been drawn from the district's general fund and not based on a per-student or per-course formula. The somewhat arbitrary staffing allocations have acted as artificial caps on enrollment and restrained program growth to some degree. Each school year, every open seat is filled. Online course sections close to enrollment as they become full—without regard to increased student demand. While the district has some flexibility to direct funds at its discretion, a funding mechanism at the state level is needed that supports a process for funding to follow the student to the course level.

A second fiscal challenge is found in California Education Code that ties online learning to independent study for the purpose of attendance accounting, which in turn drives funding allocation. While there may be online programs which function within that independent study definition, the blended learning program at RVS clearly does not. The independent study attendance accounting process includes paperwork processes that unnecessarily inflate the costs of the program by forcing staff to collect student work samples that are used to justify funding during annual financial audits. This process includes printing paper copies of digital student work products. Although the learning management system provides a significant amount of student engagement data in the form of access times, engagement levels, and activity reports, this information cannot be used to show student attendance for funding purposes. At the same time, a student's physical presence in the traditional school program is sufficient for funding purposes—whether or not that student is engaged in learning or is simply in the room.

Managing Expectations and Assumptions

The initial perception of online courses by our first few groups of students was that online classes would be more manageable—maybe even easier. Those students quickly came to realize that this is not the case. In fact, even gifted students struggled with the independence in the new learning environment. Survey data indicate that the students had not really considered how much they had come to depend on the presence of teachers as facilitators of learning conversations. They spoke directly to their development of self-discipline and an increased willingness to assert themselves more directly in academic discussions.

Another example is found in an algebra course where students receive a personalized math profile based on their current level of math achievement. There was a sense that they wanted to race through the lessons to beat their previous score, as if they

were playing a video game. While beating a game is engaging, teachers wrestled with ways to ensure a deeper understanding of the concepts. Course developers and game designers are now working to find ways to incorporate more quest-based activities and other ways to embed reward concepts common to the gaming environment. There are very exciting things on the horizon as the two worlds converge.

While a traditional class might follow each lesson from chapter to chapter, the RVS courses support increased levels of individualization within the learning process. This requires the teacher to work closely with each student to identify a learning pathway that is not simply the next page in the book. As teachers have become savvier with regard to their intentional practice, we have continued to build customized experiences for multiple learning styles and personal interests. RVS teachers are passionate about delivering innovative applications of the curriculum. They have developed a vision that includes the construction of blended courses that meet UC admission requirements, incorporates projects that make graduates more competitive, and engages students and families in project-based learning experiences that bring a positive impact to the community.

The Role of the Community in Program Development

The staff and faculty at RVS are strongly committed to the RUSD community, as well as the larger community of Riverside and beyond. RVS offers numerous opportunities for members of the local community to be involved in the school program, while at the same time encouraging students and teachers to engage in service to their communities of choice. Community members (some of whom are also parents of RVS students) serve on various committees and/or the PTA. The Steering Committee provides guidance to the school administration and assists in developing a vision of a 21st century school program that is integrated with the business community and institutions of higher education.

Local business leaders and city government officials are encouraged to engage in online and on-site discussions with RVS students, particularly as they relate to various internship and career opportunities. For example, our American Government teacher (also a sitting city councilman) has worked to engage various civic leaders in online discussions with students as a component of the American Government course. He has also extended opportunities for students in community service and internship activities through Riverside City Hall. Likewise, faculty and staff from local colleges and universities (members of the Steering Committee) are facilitating activities to help students establish and pursue a college-preparatory pathway. These activities will include campus walks, discussion groups, and an online college and career center that is accessible to students at all times.

RVS students are encouraged to participate in the annual College and Career Fair sponsored by the Greater Riverside Area Chambers of Commerce and the Science and Technology Education Partnership (STEP) conference sponsored by our local member of Congress. Since FY2009, our local congressman has supported the program by securing two Congressional budget appropriations (in excess of $600,000), which have funded curriculum development in online science, technology, engineering, and math (STEM) classes offered through the virtual school. This project laid the foundation for the California Open Campus Initiative, a collaboration of

school districts and county offices of education across the state that is working to drive state policy changes that will increase access to online learning for students in rural areas of the state.

The University of Southern California Study

A 2011 dissertation study conducted by a University of Southern California Rossier School of Education student (pending publication) looked at how student choice was driving enrollment at the virtual school and uncovered school practices that were aligned with best practice in the research. The drivers of enrollment included credit recovery (10.1%), grade improvements for college entrance (11.3%), mitigation of an impacted schedule (23.1%), and a preference to learn on their own (34.1%). Sixty-six percent of students enrolled in their first online course to meet a specific educational objective and the same percentage indicated that they had pursued online courses in order to create more time for other school-related activities (e.g., fine arts, athletics, or more courses than were required for graduation).

The study revealed several positive effects specifically relating to customization of a student's educational pathway. Comments made by student participants in the study suggested that the traditional school structures challenged the students' ability to work at their own pace and fulfill traditional course expectations while maintaining a high level of involvement in extracurricular activities. Students reported that they liked that their schedules could include a combination of traditional site-based and online courses and that they thought the combination of traditional and online classes increased their interest in learning. The flexibility inherent in online learning was the most common positive response from students. In a number of cases, access to online courses facilitated the pursuit of a high school diploma that had been sidelined by life circumstances that may or may not have been in the control of the student. Each student's ability to access online learning supported the development of a unique pathway to graduation and resulted in a larger number of RUSD graduates prepared for transition to higher education.

The California Open Campus Initiative

The RVS program was in its second year of operation when California's Digital Textbook Initiative was passed and changes to California Education Code opened doors for using state textbook funds to purchase the hardware and software to support access to digital curricular resources. Early on, RUSD engaged several major publishers and technology providers to determine how to best leverage the two changes (the Digital Textbook Initiative and the Education Code) to widen the impact of digital curriculum in the traditional and online school environments. We also have brought into the conversations CK12 Foundation, University of California College Prep (UCCP), and numerous other open source content providers. CK12 has developed a content aggregator (a FlexBook) that allows students and/or teachers to build their own digital textbooks using any digital content available via the Internet. UCCP publishes free, high-quality online courses that support their mission of helping low-SES students and students from rural settings to obtain college eligibility. The combination of open source content and a completely customizable digital textbook has given teachers across the district the ability to aggregate learning resources to address the individual needs

of each child. Better yet, it provides a platform for students to build their own textbooks that demonstrate what they have learned about the subject(s) they have been investigating.

In 2011 the Federal Communications Commission (FCC) selected Riverside Unified School District as lead agency for an innovative open access pilot that utilizes eRate funds to ensure home and school Internet connectivity to RUSD students and allows students to bring their own devices onto campus for use within the learning environment. This pilot specifically supports low-income families through the provisioning of no-cost computers and Internet connectivity as a means to close the digital divide and address the achievement gap. The addition of these two drivers—the new open access policy and district-wide access to RVS learning and content management system—has enabled RUSD to make a shift to digital textbooks and has resulted in a wide-scale expansion of blended learning across this urban school district. These pilot projects, designed to expand blended learning at all RUSD schools, have been supported by numerous business partners, including Apple, Cisco, CK12, Hewlett Packard, Verizon, Target, School-2-Home, Intel, Blackboard, Haiku, Houghton Mifflin Harcourt, and Pearson.

Associated projects have created a unique opportunity for students across the state by way of the California Open Campus Initiative. This wide-ranging, collaborative project is fueled by district and school leaders who believe that school systems must embrace change if they are to remain relevant and competitive as the options for school choice expand in both public and private sectors. New economic realities are increasing demand for schools to be more effective and efficient, while ensuring student access to a high-quality, rigorous, college-preparatory education. The California Open Campus Initiative has laid the foundation for a statewide learning and content management system that is accessible to all California students and teachers. We believe this is a critical step toward systemic change and, along with our partners, have invested a significant amount of time and resources to the project.

Blended Learning and the 2011–2016 RUSD Technology Use Plan

When the RVS Steering Committee was formed and tasked with developing the online school, a conscious decision was made to steer clear of developing a standalone curriculum that was disconnected from the RUSD instructional program. Rather, we set out to develop an online version of the RUSD curricular program, one that was enhanced with the tools made available by digital learning and that supported personalization of pace, pathway, and location. While a mirrored curricular program somewhat restricted leveraging the vast resources that exist online, combining the best of both worlds ensured that students would have access to a well-articulated curriculum and laid the foundation for the wide-scale adoption of blended learning, as laid out in the innovative RUSD Technology Use Plan.

This district's newly adopted technology plan outlines a systemic shift in focus from standardization and compliance to innovation and experimentation. In this paradigm, value is no longer attached to attendance but rather on growth as measured against student learning goals. The plan promotes a focus on personalized learning in which instruction is paced to learning needs and tailored to the learning style of the student. Learning objectives focus on creating environments and activities that support engagement and motivation, as

determined solely from the learner's perspective. The plan articulates a belief that teacher practice is most effective when guided by student-specific learning data that is gathered on a daily basis (or more frequently) and used to inform decision making at the student level.

Riverside has initiated system redesign in which connected learning replaces learning in isolation for both teachers and students. By leveraging the ubiquitous nature of blended and virtual learning spaces, we are promoting environments where learning is the constant and time and location are the variables. By promoting learning as borderless (time, place, resources, and opportunity), schools and structures are defined only by student learning and productivity—by where the learning takes place. The plan calls for all learners in the system (adults and students) to have anytime access to learning resources, opportunities, and experiences. This plan embraces the challenge to match the optimal teacher, learning environment, and resources with each learner's particular needs and preferences.

A Changing Instructional Paradigm

RUSD teachers are beginning to transition to blended learning within the traditional classrooms. Some have utilized content created by RVS teachers, and many are beginning to generate their own content. Some teachers begin units with well-structured introductory lessons in the classroom and then proceed with follow-up materials and activities that are conducted online. Resources and activities include the use of eBooks, classroom-based hands-on experiences, digital resources, self-paced instruction, online chat, blogs, wikis, videoconferencing, and podcasting. Other teachers are "flipping" their classrooms by delivering lectures via video (that students watch at home as homework), saving valuable class time for high-yield activities that promote academic discourse and high levels of student engagement. In these learning environments, a significant portion of learning has been moved online—leveraging the best of what traditional classrooms and online courses have to offer.

The RUSD vision speaks to learning environments that promote active, independent learning, while mitigating the constraints of time and space, whether at the Riverside Virtual School or any of the district's comprehensive schools. By focusing on the learning—and therefore the learner—the plan redefines the role of the teacher as a facilitator of student-directed inquiry and learning. This represents a shift from teachers as solo practitioners to well-connected lead learners. While there is a need for certificated, professional teachers, learning is no longer bound to teacher certification or constricted within the walls of the classroom. The plan defines how virtual learning environments will engage professionals from the field and supports a means for expert voices to be delivered into the learning process. The same is true for engaging and incorporating voices of students and educators around the globe. The RUSD learning environments (both traditional and virtual) are moving from a transmission (passive) learning model to a transaction (active) model of learning—one that supports global awareness and connectedness, at both adult and student levels, throughout the organization.

Promoting Policies that Support Access in School and at Home

RUSD has implemented an open access policy as a means to increase teacher and student access to technology in school and at home. Open access provides the opportunity for

students and teachers to bring their personal computer resources (e.g., cell phones, tablets, laptops) on campus for use within the learning process. The policy also allows the school district to provide devices to those students who do not have technology and/or Internet access at home. RUSD schools check out devices through the traditional textbook tracking system. In many cases, the devices are preloaded with digital versions of the student textbooks. In 2011, two RUSD schools issued digital textbooks and devices to 100% of their students and staff. Three additional schools will go one-to-one in the 2012–2013 school year. The open access and "bring your own device (BYOD)" policies have dramatically increased student and teacher access to technology—and to the school's curricular program—both in school and at home.

Online courses and blended learning activities are enabling students and teachers to make more effective use of the vast resources available via the Internet, while promoting choice and flexibility. All RUSD students and adults now have access to a robust learning and content management system, providing opportunities to extend and reinforce learning, both during and beyond the school day. These cloudbased resources are accessible to students and staff at any time. The learning and content management system is also available to parents who access the system to follow classroom activities, monitor homework assignments, and communicate with instructional and administrative staff at the schools.

Much of what has been outlined in the technology plan hinges on making learning resources—indeed the entire instructional program of the school—available to students and parents from any location at any time. This requires two major structural shifts to be accomplished. The first shift involves moving a large amount of digital resources to the RVS content management system. This enables access to the curricular program to individuals while in school or at home and connects the learning activities to the district's student information system. The second shift involves student and staff access, including access to a device (ours or theirs) capable of interacting with the resources that support the academic program. Every RUSD staff member, student, and parent can now access high-quality learning resources, as well as view grade and attendance information. The first shift is well under way. RUSD's open access policy represents an initial step to address user access issues in the second shift.

Even in good budgetary times, schools have struggled to provide equitable access to technology and to mitigate the digital divide. Current economic conditions have exacerbated that problem and challenged our efforts to bridge the gaps between those that have technology in their homes and those that do not. The district's open access or BYOD position has enabled schools to leverage resources that parents have already purchased for their students. Open access allows students—who previously had to power down their technology before walking onto campus—to not only bring their technology to school but also to use it as an educational tool. While informal RUSD surveys demonstrate that approximately 50% of students have a personal computer device at home, in some areas of our community the rate is as high as 85%. The new RUSD acceptable use policy and modified wireless network infrastructure provides a means to leverage student-owned devices and to provision district assets in a more strategic manner. The open access policy is one step in addressing the district's commitment to ensure equal access to digital curricular resources to all RUSD students, including those at RVS.

RUSD has leveraged a strong partnership with the city of Riverside as a means to bridge the digital divide. Approximately 70% of our students reside within the city of Riverside and have access to the city's free Wi-Fi system. However, if a student is unable to connect to the city's Wi-Fi system, we can provide a netbook device with embedded broadband access for them to check out at no cost. Currently, there are approximately 250 netbooks checked out to our students. An FCC grant awarded in 2011 allowed RUSD to expand this program to an additional 2,500 students. These efforts have enabled RUSD to make huge strides towards completing the second shift.

RUSD has aggressively pursued grant funding to extend the use of technology as a driver behind the instructional program and has leveraged over $10 million since 2004 to promote instructional technology initiatives. Students, teachers, and parents have access to extensive online resources, a wide range of curriculum-based software programs, numerous digital textbooks, and the course content contained in the RVS learning and content management system. While effective teaching and learning remain our focus, we are also leveraging teacher, student, and parent use of technology in order to support student engagement and academic achievement.

Implications

The Importance of Support within the Construct of Systemic Change

Since Riverside's initial online learning pilot in 2005, significant changes have taken place in both the state and national economies. These changes have presented numerous opportunities, particularly those that support increasing the effectiveness and efficiency of the district's learning environments. Online and blended learning have been embraced as potential supports for both. They have also been embraced by families looking for more flexible schedules or access to previously unavailable academic opportunities.

As the person charged with overseeing these programs, I have been fortunate to have the support and active engagement of the district superintendent, as well as members of the RUSD Board of Education and the Superintendent's Cabinet. Over the past few years, we have walked forward a comprehensive vision for blended learning and hybrid school programs that has been embraced by school administrators and board members within the newly adopted technology plan. The process has been both challenging and rewarding, particularly as 21st century teaching and learning models confront the structures and policies designed to support 20th century schools. To encourage those entering the fray, I would like to share a few thoughts.

Lessons Learned?

- Change that is easy is also (frequently) not worth pursuing. (Seth Godin's *The Dip*)
- You are not alone. (Clay Shirky's *Here Comes Everybody*)

- Students and parents want choice, not online classes.
- Work first in non-competitive spaces (Christensen and Horn's *Disrupting Class*), but maintain ties to the system (my two cents).
- Fifty percent online by 2019 may not mean what "we" first thought it meant.
- Ideas are enhanced through testing and don't always work the way you envision them.
- Tell your story in multiple venues and with many voices.
- Don't be afraid to allow "outsiders" to evaluate your work. In fact, invite them to.
- Statistical regression toward the mean can be overcome, as long as you acknowledge and plan for it. That said—it is still frustrating.
- Passion and vision trump resistance and fear. (Seth Godin's *Linchpin* and *Tribes*)

Are We There Yet?

The RVS program has an established supplemental enrollment and a growing full-time program that is subject to the standard accountability measures in all California schools. Since 2009, when RVS school-wide achievement data was initially reported by the state, RVS has beaten the state Academic Performance Indicator (API) target of 800. RVS has also topped the overall district API for 2009, 2010, and 2011. RVS student performance on the California High School Exit Exam (CAHSEE) consistently exceeded both the district and state-wide averages for 10th graders (the grade level where the first administration is offered at high school). One-hundred percent of RVS 10th graders passed the English Language Arts portion of the CAHSEE in 2011, and the mean scaled scores for RVS students (all grades) were 400 (out of a possible 450) in ELA and 381 in math. RVS has met or exceeded the Academic Yearly Progress (AYP) targets in both ELA and math during each reporting year since RVS scores were first reported in 2009. As the size of the full-time school program grows, we would anticipate some regression toward the mean. However, we have instituted programs to support student academic growth across the proficiency bands, in hopes of mitigating any loss.

RVS continues to hold a high standard for graduates and supports courses that enable graduates in completing all of the University of California entrance requirements (a-g courses) as their high school graduation pathway. Students are encouraged to pursue enrollment in local college courses during their time in high school. The flexible schedule available to RVS full-time students provides time for mentoring and internships within the business community. Specific career-related academic pathways are being developed to support students who have interests in senior internships in the green energy and biomedical industries. Both industries have strong footprints in the local business and higher-education communities and are eager to develop partnerships with the school program.

We are actively working with our partners in the content development space to construct learning resources that support learners in both traditional and virtual environments. RVS teachers are working with non-profit partners and institutions of higher learning to conceive and deploy pilots that test assumptions about 21st century learners and those who teach them.

The University of Southern California continues to assist in assessing practices deployed both in Riverside and with our partnering school districts via the California Open Campus Initiative.

Implications for Researchers and Policymakers

Emerging information and communication technologies support implementation of findings from previous research on effective learning and teaching **strategies**. This includes differentiation to the individual student level, promoting learner choice, extending the learning environment beyond the walls of the school, and ensuring best initial instruction to all students. Still, much research continues to focus on the **tools** used to implement the strategies. This is particularly important in that the tools themselves change as technology advances. This rate of change has sped up dramatically in the past 10 years.

I am hopeful that as the focus is shifted from the delivery mechanism to the teaching/learning strategy any particular tool supports, findings will positively impact scalability and access issues. As research identifies the models worth scaling, policymakers will need to revisit existing policies that guide school practice. The two most pressing issues that come to my mind are attendance tracking policies and related funding mechanisms.

Implications for Content Providers

We live in a new world, one in which the roles and responsibilities for all players are under scrutiny. Organizations that have been in power for centuries are struggling to assert their relevance in a world where information is accessible to all. For quite some time, schools served as knowledge providers (we owned the textbooks) and legitimizers of formal education. That is no longer the case as evidenced by the increasing number of students that are accessing the halls of our great universities without once setting foot in a classroom. Likewise, publishers collected information relating to what needed to be known in books that students carried to and from school. It was a perfect relationship—until the emergence of the World Wide Web.

Now content is freely available to anyone, from anywhere, at any time. Initially, schools questioned the quality of the information and the presence of biased arguments. That, I guess, was not an issue with the textbooks. It was easy to challenge the accuracy of the information in Wikipedia, until a study was conducted that compared that website to one of the most respected encyclopedias we have on our shelves. You might be surprised to find out which contained the highest number of errors. The no-cost, user-edited, dynamic, and constantly expanding online encyclopedia has since become a valuable resource for learners of all ages.

The question I ask content providers is, "What can you provide students that they cannot get for free somewhere else?" I believe this new reality is driving publishers of content into a new space in which they must market wrap-around services for students, teachers, and parents. Like schools, publishers have to clearly identify and articulate what value-added effect they bring to the learning transaction. This is particularly true in an environment where savvy students and parents are accessing MIT classes via iTunes U or finding help with learning math and chemistry from Sal Khan and his friends.

Implications for School and District Leaders

Consider the following two stories. First is a story about a young student that I met when he was 11. Nick loved math. It just came naturally to him. The problem was he didn't like his math class. Sure, he was able to help others who didn't understand—something that he was frequently called on to do by teachers—but that was not as much fun, and he was not learning. He liked to be challenged and to wrestle with problems until he got them right. His frustration was related to the slow pace of the other students in his sixth grade class. So, Nick's mom enrolled him in the Riverside Virtual School's high school Algebra I course. While other students in his classroom worked on math, Nick went to the computer and logged onto his high-school-level algebra class. By the end of sixth grade, Nick demonstrated advanced levels of proficiency on the district's Algebra I and Algebra II assessments and the mandated end-of-course exams, and he had fun the whole time.

Then there is Mr. Emett. It was Christmas Eve and his wife and sister-in-law were cooking dinner when Mr. Emett sat down at his computer to enter the discussion prompts for his AP American Government class, which he assumed the students would tend to after winter break. He thought he would get a little ahead of them. They would be ready to hit the ground running when everyone returned to school in a little over a week. It isn't uncommon for teachers to use their time during break to prepare for class assignments in traditional classrooms. What was interesting was the response from the students. By the time the students returned to school in January, they had made hundreds of posts to the new discussion about the Second Amendment. They didn't care that the school was closed, and they hadn't waited for a bell to ring before they dove into the conversation; they just made the choice to move ahead.

Schools should take note that in both cases the existing school structures (grade-level placement and school calendars) served as limits to student learning. Also, in both cases, students willingly invested time and effort when those obstacles were removed. The flexibility inherent in online learning provided a means for students to tend to their own learning in ways that were meaningful to them and at times that are not typically counted as school hours. An increasing number of high-quality options have become more readily available to students in the past 10 years. Parents, frustrated with the rigidity in the current systems, have become far more comfortable pursuing the choices offered outside of school.

Implications for Students and Parents

My friends in school systems might not like this, but from my perspective, the ball is firmly in our court. Our willingness to assert the right to choose the learning environment, instructional delivery methods, and school program carries with it the power to change school systems for the better. Don't get me wrong—I love public education, and I am very proud of the people I work with in both traditional and virtual classrooms. I am also passionate about learning and committed to finding the most effective and efficient means for educating our students.

Few would argue that children today are entering elementary classrooms with a new set of skills and learning preferences, compared to students even 10 years ago. They learn, play, and approach challenges differently than I did growing up. That is neither

good nor bad—it just is—and schools must attend to the new reality. Like these new learners, school leaders need to be comfortable with play and experimentation in the process. We need to be curious and to embrace discovery without defaulting to previous known positions. We must be fearless. If we are not, we risk becoming irrelevant.

About the Author

Dr. David Haglund (@HagdogUSC) oversees non-traditional school programs in Riverside Unified School District and is the founding principal of the innovative Riverside Virtual School, which offers online courses to students across the state via the California Open Campus. Haglund consults with leadership teams across the country, sharing a transformative vision for 21st-century schools. He is developing a cadre of school and district leaders that are prepared to leverage technology as a set of tools used to broaden the reach of exceptional teachers and embed virtual and blended-learning programs into the core instructional program of schools.

SECTION THREE

School Partnership Programs

CHAPTER

4

Prince George's County Public Schools ACCESS Online Program

Next Stop, Graduation: The ACCESS Blended Learning Approach for Under-Credited 11th and 12th Graders

Mickey Revenaugh

Co-Founder of Connections Academy, and Executive Vice President of Connections Learning

ACCESS is a partnership of the Prince George's County (Maryland) Public Schools and Connections Academy/ Connections Learning. ACCESS delivers supplementary courses in a blended learning environment specifically for 11th and 12th graders who have specific credits needed for graduation—either courses they have dropped or failed, or courses they simply never had time to fit into their schedules. Diverse in background and achievement levels but highly motivated to succeed, students make their own way across this 500-square-mile district to take advantage of ACCESS.

The Context: A Big District in More Ways than One

Prince George's County, Maryland, is a study in contradictions. Surrounding Washington, DC, on the north, east, and south, Prince George's is in some ways a classic inner-ring suburb—yet with nearly 500 square miles of geography, it includes substantial rural areas as well (see Figure 4-1). Prince George's prides itself on being the nation's wealthiest majority-African American county, yet many of its communities, particularly those "inside the Beltway" nearest to Washington, are impoverished and struggling.

Figure 4-1 Prince George's County map courtesy of Prince George's County Government website (*www.co.pg.md.us*) with site of ACCESS Online program marked.

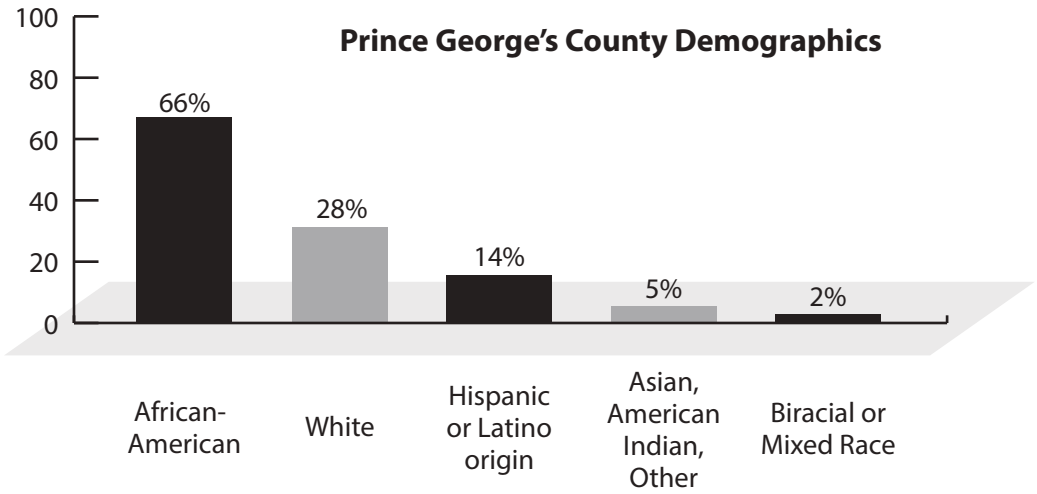

Figure 4-2 Demographics of the county, from the 2010 Census, *www.census.gov*

The Prince George's County Public Schools (PGCPS) district reflects the county's diversity (see Figure 4-2). Of its more than 125,000 students, 74% are African American, 17% are of Hispanic descent (a concentration that grows yearly), and 48% qualify for free and reduced-price lunch.

While PGCPS has worked tirelessly to keep its graduation rate up, in 2010 the dropout rate actually increased, according to that year's Maryland state report card. Sub-groups—particularly males, students with special needs, and students of Hispanic descent—continue to lag significantly. It should be noted that the calculation of graduation rates has been complicated for many districts by the recent shift in methodologies toward tracking cohorts of students, which resulted in a drop in reported graduation rates for many districts across the nation. Partly as a result of this change in statistical approach, PGCPS made *Education Week*'s list of "dropout epicenters," 25 school districts that, together, accounted for one of every five "non-graduates" for the class of 2011.[1]

Among those PGCPS students who do graduate, nearly 50% are not able to pass all four of their state-required High School Assessment exams and therefore must complete special projects in order to qualify for a diploma. Average SAT scores across PGCPS lag behind Maryland as a whole by more than 190 points.

It was in this context in January 2010 that PGCPS began seeking partners for what it called a "non-traditional high school." The district envisioned a combination of technology-facilitated and face-to-face instruction to provide a more personalized path to graduation for students who had previously struggled in the conventional classroom—including those capable of doing accelerated work, as well as those in need of credit recovery. While the term "blended" had not yet come into vogue and the district's Request for Proposal did not specify how the program's elements should be combined, PGCPS district leaders were clear about their desire for a cutting-edge solution.

PGCPS had already carved out a leadership role within the state of Maryland as a district favoring the "portfolio" approach to public school choice. The non-traditional high school would be part of a suite of programs including alternative schools, evening high schools, and charter schools that the district had developed over the past five years to accommodate increasingly diverse student learning needs. The goal was to launch the new, non-traditional high school in the fall of 2010.

ACCESS in Action: Year 1, 2010–2011

As a Maryland-based online learning pioneer with nearly a decade of experience serving K–12 students in a variety of settings across the nation, Connections Academy (now officially called Connections Education) was thrilled to encounter in PGCPS a Maryland school district so clearly intent on innovation. In response to the district's call for partners in early 2010, Connections proposed a blended learning approach that combined high expectations with flexibility of time and place. Up to 60 full-time students would benefit from face-to-face staff guidance in a physical "learning center" provided by the district, as well as 24/7 access to top-notch online curriculum. Students would be able to earn their way to more

1 Swanson, C. B. (2010, June 2). U.S. graduation rate continues decline. Diplomas Count special report. Education Week.

virtual, anytime-anywhere engagement through good attendance and performance, rather than having to report daily to the learning center. Expert online teachers would collaborate with face-to-face staff to accommodate student needs. The entire program would be tied together with a constant flow of learning data to permit dynamic differentiation. Table 4-1 below illustrates the sharing of responsibilities between the partners.

Table 4-1 The sharing of responsibilities between the partners

The sharing of responsibilities between the partners	
PGCPS	**Connections**
Physical "learning lab" facility for blended program	Online curriculum aligned to national and state standards
Computers and Internet access for student use in learning lab	Connexus® technology platform for delivery of curriculum and management of student data
Face-to-face staff (teachers and/or paraprofessionals) to supervise learning lab	A Maryland-certified, expert online teacher for each course
Outreach, recruitment, and admission of students	Data management and reporting plus Program Management

PGCPS and Connections formalized their partnership in late July 2010, just weeks before the beginning of the school year. The program was christened ACCESS Online (with ACCESS standing for "Alternative, Charter, Contract, Evening, Summer School" in honor of the district's portfolio approach) and was located in the center-county community of Bladensburg in a district building known as Annapolis Road Academy that housed several other innovative alternative programs. Sited near public transportation with easy access to the major highways crisscrossing Prince George's County, ACCESS was as close to "centrally located" as was possible in the large district.

By the end of the first launch meeting in August 2010, it was apparent that one important tweak would be necessary to the partners' initial shared vision for the program. While the original model called for highly qualified paraprofessionals to staff the face-to-face Learning Center, Maryland regulations required involvement of in-person licensed teachers, and Connections' more recent experience in other blended urban settings underscored the value of having professional teachers in the face-to-face mix: At Vision Academy charter school in Houston, students in the blended high school lab demonstrated improved results in Algebra in particular when their paraprofessional "coach" was replaced with a licensed math teacher working in partnership with the online teacher. The PGCPS team knew just the profile that would work: its 10-month teacher pool that gravitated toward non-traditional assignments. In the revised ACCESS model, two Partner Teachers would provide both guidance/motivation and content assistance, supported by the subject-expert online teachers.

While PGCPS worked on selecting and placing the teachers, the partners converted two traditional classrooms in the Annapolis Road Academy building into ACCESS learning labs. Each oversized classroom was equipped with desktop PCs distributed around the room to accommodate up to 30 students working simultaneously, with room for the Partner Teachers to circulate, providing motivation and assistance to students individually and in small groups.

In keeping with state requirements, students would spend at least 20% of their time in face-to-face instruction in the learning labs, which would be open Monday through Thursday, 9:30 am to 5:30 pm. The overall goal and focus would be completion of necessary credits for high school graduation and passing the standardized Maryland High School Assessments. The ACCESS program adopted the district's overall policy on course drops: If a student dropped a course within the first 10 school days after the student start date, there would be no record of the course or grade on any official school system documents. If a student withdrew from a course after the 10-day period, the transcript provided by Connections would show either withdraw/pass or withdraw/fail.

Beyond the learning lab, students would have online access to their curriculum from home or elsewhere in the community, allowing for flexible scheduling and the intensive work often needed to complete otherwise missing credits. Parents of participating students would also have access to the system to monitor their students' progress and communicate with both the online and face-to-face teachers.

In early September 2010, Connections provided intensive initial training at the ACCESS site to the two PGCPS Partner Teachers and other ACCESS program staff. Connections' Maryland-certified online teachers also participated, in person or via web conference. One critical training topic was instructional roles and responsibilities in this new blended approach: how would the face-to-face and online teachers work together to ensure student success? Given the state's "20% rule," how could the team make the most of the students' face-time while also preserving the flexibility of the online portion? For example, the Connections online teachers took responsibility for grading all student work, while the ACCESS Partner Teachers were responsible for in-person interventions. The ACCESS and Connections teachers bonded through the process of working these issues out. Partner Teacher responsibilities are highlighted in Figure 4-3.

ACCESS staff also required extensive training on the use of the Connections platform, now known as Connexus®. Built from the ground up for use in K–12 online/blended learning, this integrated platform includes a learning management system, content management system, student information system, asset management system, and communications and scheduling functions. For the ACCESS blended setting, Connections developed a unique system role for the Partner Teachers to facilitate their critical instructional and motivational responsibilities.

In the short time before the 2010–2011 year was to begin, ACCESS staff also needed to publicize the program and recruit students. The partners reached out to high school counselors throughout the district to alert them to this new alternative for PCGCS students. The initial reaction was somewhat lukewarm—despite the growing popularity of online learning in other states and some experience in PGPCS with Maryland Virtual Learning Opportunities, the state's limited online clearinghouse program, counselors were slow to embrace the ACCESS approach to blended learning. Initial applications for student participation were sparse but increased rapidly over the year as juniors and seniors across the district got word of the program from peers and counselors.

FACE-TO-FACE PARTNER TEACHER RESPONSIBILITIES

- Create Classroom Conditions That Maximize Student Success and Achievement
  - Set clear expectations for students, provide ready access to teacher help and embrace collaboration.
- Communicate Frequently
  - Communicate with Connections teachers and with students and their families, using all available modes and tools (including WebMail, message boards, LiveLesson™ web conference, telephone, and face-to-face).
- Document All Interactions
  - Make extensive and strategic use of the Log function in the Connexus® platform.
  - Monitor Student Participation and Performance
  - Keep careful watch on each student's online grade book and log to coach, motivate, and intervene as needed.
- Create an Online Learning Community
  - Use face-to-face and online strategies to help connect all stakeholders (students, parents, online teachers, and program staff) in the shared goal of student success.
- Personalize Students' Programs
  - Work with Connections online teachers to personalize students' programs by modifying lesson pacing, lesson content, and organizational routines.
- Use Student Data
  - Regularly review and use abundant student data collected by the Connexus platform to facilitate each student's learning.
- Provide Timely Feedback
  - Respond personally to student on-site work and advocate for students in ensuring and interpreting feedback from online teachers.
- Collaborate and Develop Professionally
  - Work collaboratively with online teachers to provide mutual administrative and academic support to each other.

Figure 4-3 ACCESS Online Partner Teacher responsibilities.

Perhaps more importantly, once applications from students began to filter in and the ACCESS school year began, the need for a major shift in focus became obvious. While some students

were interested in the blended approach for their complete high school program, many more needed just a course or two. Students (and their guidance counselors) from the district's more than 20 traditional high schools sought enrollment for key graduation requirements such as Algebra 2, US History, and Physics. In some cases, students had dropped or failed these courses, while in others it was a matter of squeezing necessary courses into the time left in a high school career. In an early spring of 2011 survey of ACCESS students, 67% were taking one course, 18% were taking two courses, and 15% were taking three or more.

With no other online learning resources to tap into, PGCPS students were turning to ACCESS for classic supplementary virtual needs—with two wrinkles: most of the students were 11th and 12th graders staring down the barrel of a graduation deadline, and all were willing to travel across the county's large geography to take advantage of ACCESS's blended approach. Over the course of the 2010–2011 year and into summer of 2011, more than 560 course enrollments were served. Figure 4-4 shows the enrollment patterns; the Results section includes a discussion of student outcomes and satisfaction ratings.

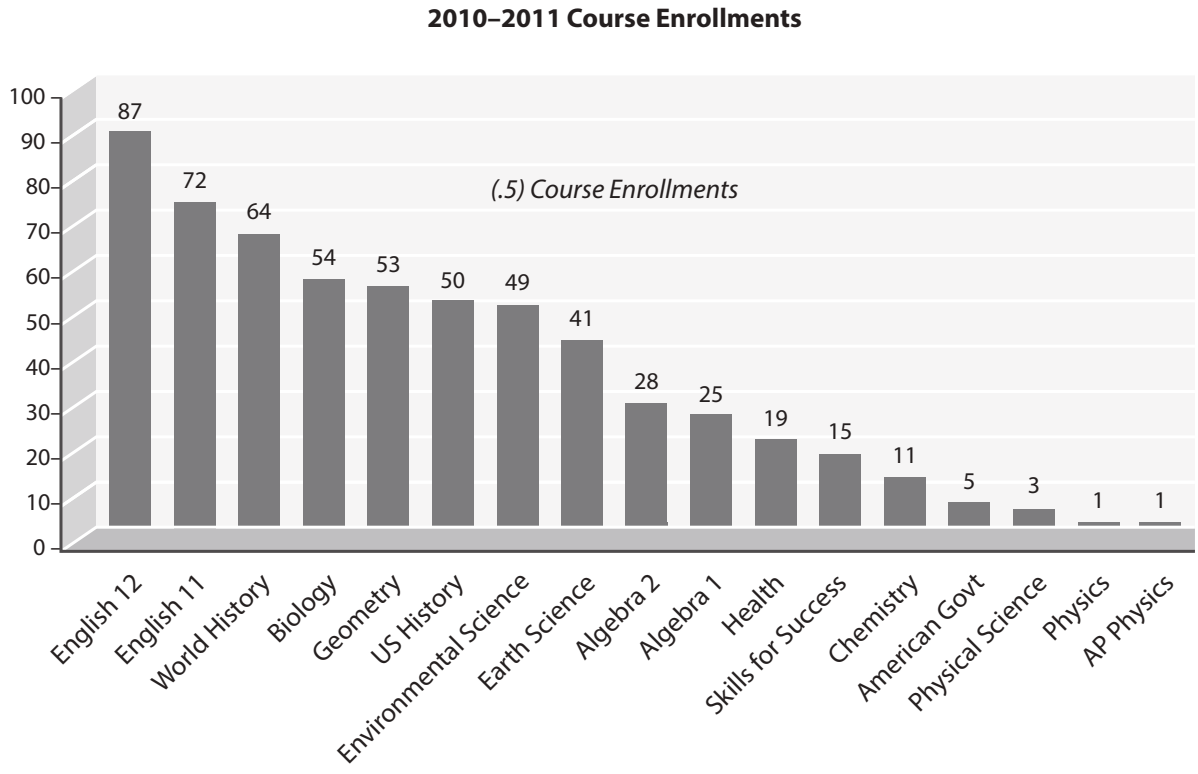

Figure 4-4 Number of half-credit enrollments by course in 2010-11.

A Day in the Life of ACCESS

At the ACCESS learning labs, Partner Teachers Lisa Williamson and Prudence Kono, along with their supervisor, ACCESS Online Instructional Coordinator Gloria Keaton, embrace the challenge of creating a wholly different learning environment for high school students. Experienced in working with students in alternative settings, the Partner Teachers have concentrated on making their labs both inspiring and supportive for the ACCESS students.

Each ACCESS enrollment begins with a face-to-face orientation attended by both students and parents. While parent involvement in the typical PGCPS high school program is as spotty as it is in most places, the motivation level is high for families of ACCESS students. For parents of PGCPS juniors and seniors facing a graduation credit gap, the other alternatives are summer school or evening school, both of which have out-of-pocket fees. ACCESS is free, but it requires commitment and diligence. So, the parents are eager to help their students succeed and are happy to check their progress online as frequently as necessary. Both students and parents have extensive and engaging online orientation courses to complete as well.

Once orientation is complete, students commit to a twice-a-week schedule at the ACCESS labs and as many hours outside the labs as it takes to successfully complete their courses. Where students work outside the lab is something the ACCESS staff carefully monitors (Figure 4-5). While the program is currently unable to provide computers and Internet access for outside use, the ACCESS team is prepared with community site referral suggestions for the small number of students unable to log on from home or base school.

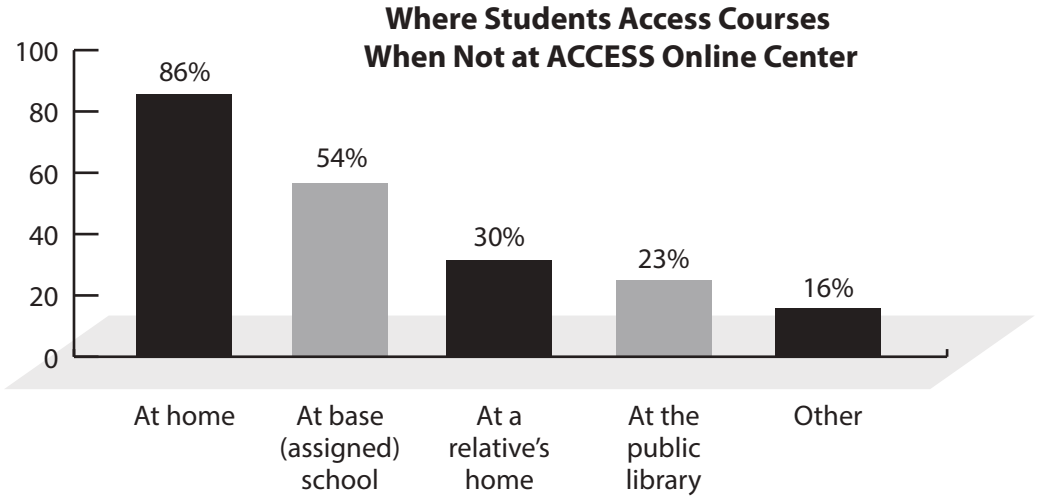

Figure 4-5 Where students access courses when not at ACCESS Online Center

From the time the ACCESS labs open at 9:30 am, Monday through Thursday, they are populated until early afternoon with a light flow of students whose base schools are evening or alternative programs or who are literally down to their last few credits before graduation. After signing in, students can work in either lab; the Partner Teachers strive to get to know all of the students so they can provide support interchangeably. Students will typically spend a couple of hours on each lab visit, accessing their courses on the computers, participating in online tutoring sessions, and taking advantage of hands-on resources like the portfolio-prep guide that reminds them how to do formatting and references for papers they'll submit to their online teachers. The Partner Teachers monitor the students' progress to ensure positive forward momentum but also to share any observations with the online teacher at scheduled weekly consultation sessions.

After 2:30, when the regular PGCPS schools let out, the trickle of students into the labs turns into a torrent. On any given day, as many as 30 students might be working in each lab for a

minimum of one hour each, often stretching to two hours. Face-to-face small group Math Intervention is available one or two afternoons a week, depending on demand, while online LiveTutor sessions are available in all subjects. Students enrolled in courses as diverse as Chemistry and English work side by side, headphones on to concentrate on the audio track of the Connections Teachlet® online animations, microphones flipped down to converse with the online teacher when in synchronous sessions. Students arriving nearer to the end of the session focus doubly hard to complete lessons and units before the lab closes at 5:30. Visitors often comment on the quiet hum in the two labs even when filled to capacity, noting that such concentrated harmony is unusual for teenagers from dozens of different high schools congregating together after regular school hours. The ACCESS staff credit the students' focus to the motivation factor: each lesson completed and each unit test passed brings them that much closer to a diploma—and their name on the ACCESS lab's Wall of Honor listing each student who has successfully completed a course. When the clock strikes 5:30, the ACCESS students reluctantly pack up, head home, and log right back on.

Year 1 Results: Fulfilling the Promise of Blended Learning

At the end of Year 1, the 2010–2011 school year, the ACCESS team took a careful look at the program's outcomes, including student achievement, stakeholder satisfaction, and overall program effectiveness. The results, most of them very promising, helped shape Year 2.

The easiest measure to track was course completion. Of the 563 course enrollments in Year 1, 80% were completed, including about 15 that were extended to the very end of June for completion. Of the courses completed, 85% were completed with a passing grade.

By subject, the rate of successful completion was high for every subject (see Figure 4-6) except Math (consisting of Algebra 1, Geometry, and Algebra 2), which led the ACCESS partners to put in place the Math Interventions described in the Year 2 section.

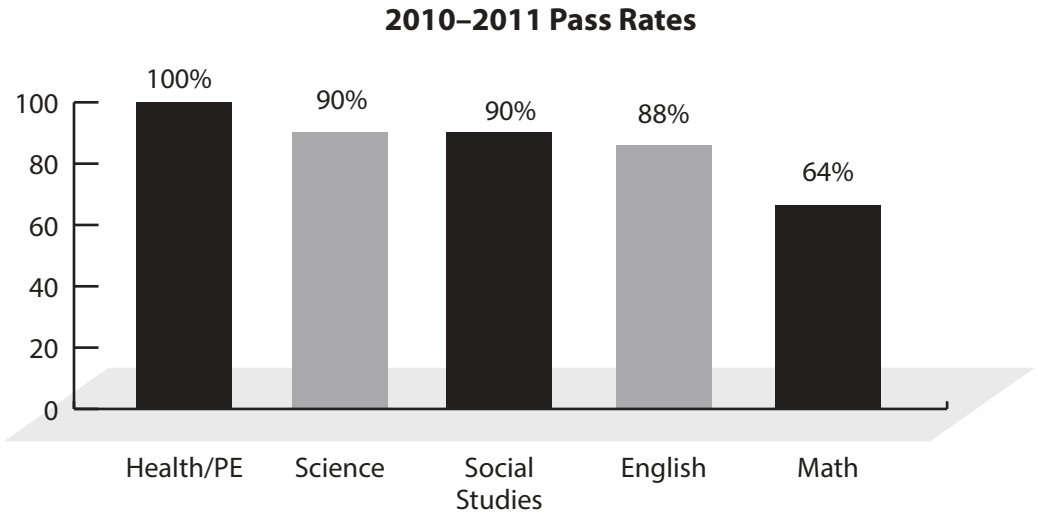

Figure 4-6 Passing rates by course; the lag in Math passing rates led to program improvements in succeeding years.

"I am currently a senior at Bowie High. I became enrolled in this program to pass the courses that I need to graduate on time this year. I recently signed my contract with the U.S. Marine Corps, so I need my high school diploma before I leave for boot camp. I am scheduled to leave for boot camp on June 13. I am on top of my work and doing everything I can to stay committed and stay ahead."

— ACCESS Student, Spring 2011

"I am enrolled at Largo Evening High School. I am a 12th grader who must graduate this year. I have been accepted to Howard University, and need these last 4 credits to ensure I graduate from high school. I am here taking these online courses which are more convenient. I am working hard to ensure I graduate."

— ACCESS Student, Spring 2011

During the spring of 2011, the ACCESS partners also surveyed students twice about their satisfaction with the program—in February and in June—with the June survey capturing feedback from a burst of students who entered the program rather late in the academic year. In both surveys, students expressed satisfaction with the program at a rate of well over 97%. Student testimonials provide "color commentary" about the urgent need for the ACCESS program.

When asked about the relative "learning impact" of online courses versus traditional face-to-face instruction, ACCESS students were overwhelmingly positive about their online experience (see Figure 4-7). None of those surveyed answered that they learned less from their online courses than from more traditional approaches.

Student Survey: Online Course Compared to Traditional Course

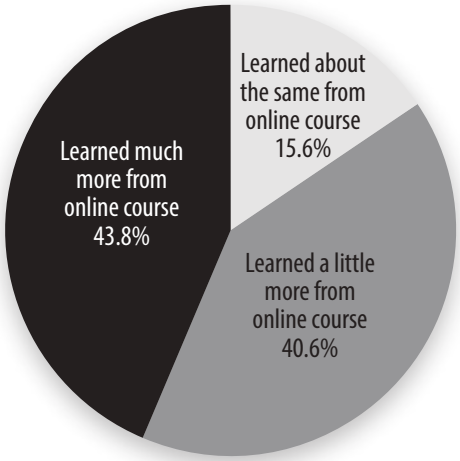

Figure 4-7 ACCESS student ratings for online vs. traditional courses.

Perhaps the ultimate measure of a blended credit acquisition/recovery program for 11th and 12th graders is the impact it has on graduation. Although data from the 2010–2011 student cohorts' passage of the multiple High School Assessment exams was still being gathered and entered into the Connexus® system, ACCESS staff are proud to point out that more than 20 seniors from the first year of ACCESS received their diplomas by the end of the summer session in 2011.

Year 2: Fine-Tuning and Expanding for 2011–2012

Based on their shared operational experiences in the first year, the ACCESS partners made the following modifications for Year 2.

- ***Intensified math intervention:*** During Year 1, the partners noticed that many ACCESS students were struggling with math. A face-to-face math specialist was engaged to offer in-person math tutoring and intervention once a week at the learning lab. For Year 2, this face-to-face math tutoring opportunity was formalized and supplemented by the Connections online LiveTutor program, which provides "on-demand" access to content experts for students during and beyond the school day.

- ***Enhanced parent involvement:*** The site-based ACCESS team noticed during Year 1 that students whose parents were engaged online (e.g., monitoring progress and web-mailing teachers) had better attendance and performance. For 2011–2012, ACCESS beefed up its requirement that parents accompany their students for face-to-face orientation before students began work, and saw parent involvement increase significantly.

- ***Formalized and expanded teacher collaboration:*** For the second program year, the partners put in place weekly online child-study meetings of the Connections and Partner Teachers to discuss individual student performance and agree on strategies. These meetings are expected to shift to a biweekly schedule later in the year.

- ***Improved admission and placement procedures:*** While students may advocate for their own admission to ACCESS, it is their local school counselors who validate their readiness and provide the necessary student data. The ACCESS staff then makes admissions decisions and transmits the data to Connections to create a student account in the system and finalize placement into courses. For 2011–2012, the team focused on improving this process to ensure that students are placed appropriately but expeditiously.

- ***From "course enrollments" to "seats":*** In recognition of the fluid nature of ACCESS enrollment—with some highly motivated students tackling multiple courses and completing them in less time than the traditional semester, while others discover missing credits in the last few months of the year—the partners agreed to shift to a seat-model for tracking program capacity. The 2011–2012 ACCESS program accommodates 300 seats—simultaneous enrollments—with multiple students

> ***"I'm starting the online classes this semester because I need to graduate in May. I do have a child and would like to spend time with her, but also complete high school in a timely fashion."***
>
> — ACCESS Student, Spring 2011

> ***"I'm 20 years old and I attend Community-Based Classroom [an alternative school]. I hope to graduate by the end of the year. I'm taking online classes because this better fits my situation and this is something I should be able to complete without much distraction. I just need you all to bear with me and help me out the best way you can on completing this journey to graduation."***
>
> — ACCESS Student, Spring 2011

using any one seat over the course of the extended academic year. This shift is expected to increase program capacity without increasing cost for the district.

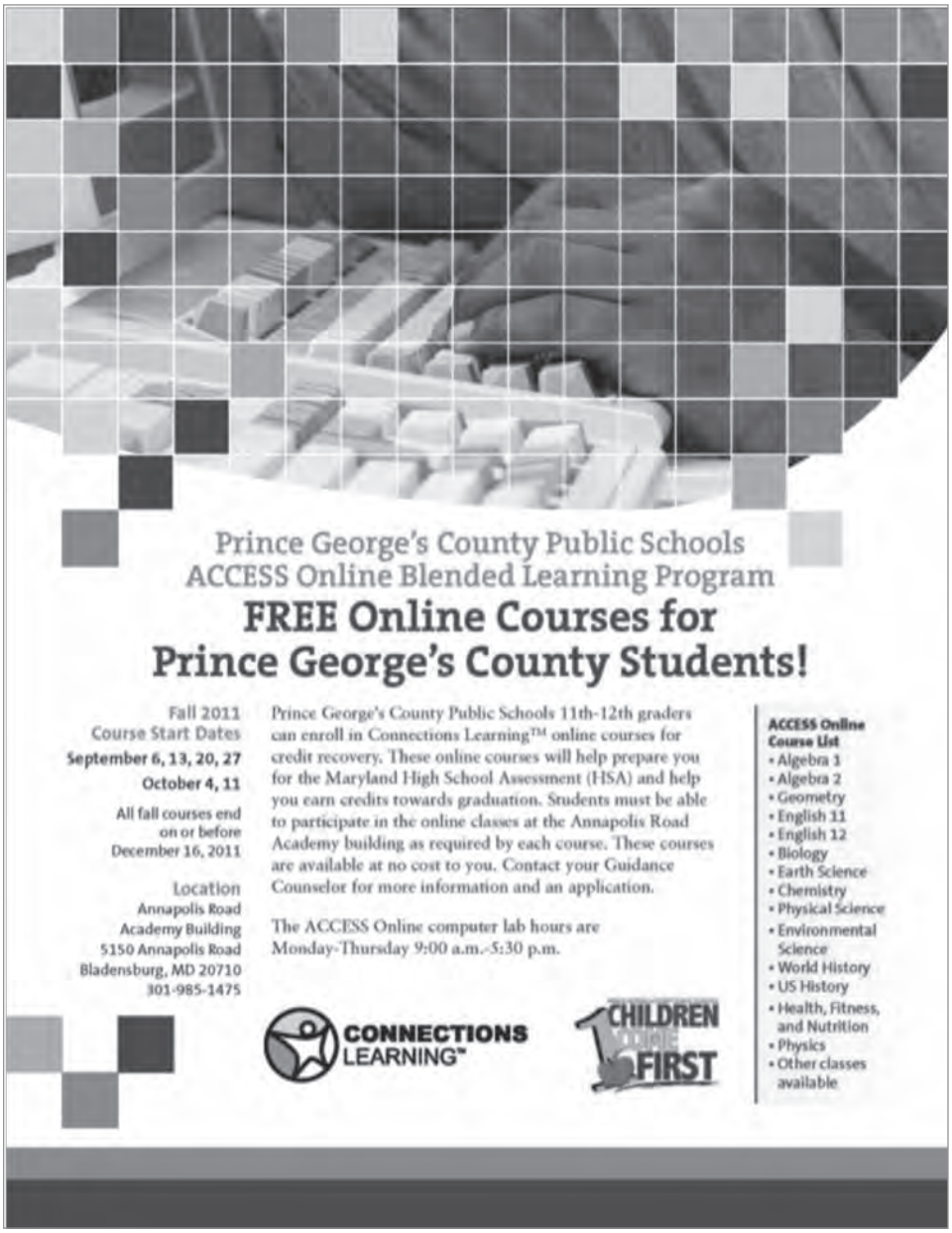

Figure 4-8 By the second year of the ACCESS Online program, the partners had developed more sophisticated outreach tools such as the flyer shown here.

Compared to Year 1, Year 2 saw a veritable deluge of applications in the program's very first weeks, with nearly all 300 seats claimed by the end of September 2011. Stepped-up outreach by the ACCESS staff (see Figure 4-8) and positive word-of-mouth among ACCESS participants helped stoke interest in the program. Students, parents, and guidance counselors now see ACCESS as an essential component in helping Prince George's students graduate successfully. Faced with a growing waiting list for ACCESS courses, district officials soon recognized the need and ordered additional seats, bringing capacity to 400 for 2011–2012.

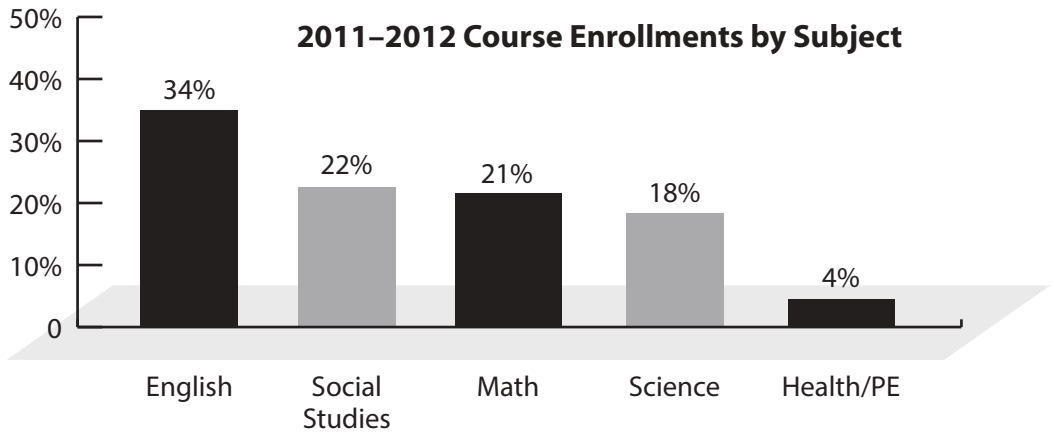

Figure 4-9 English continued to be the most popular subject by Year 2 of the ACCESS Online program.

As of July 2012, 389 PCGPS students had taken 738 courses during the 2011–2012 year. More than a third of all courses taken were in English (specifically English 11 and English 12), followed by Social Studies (World History, US History, and American Government), Math (Algebra 1, Geometry, and Algebra 2), Science (Biology, Earth Science, Physical Science, Environmental Science, and Chemistry) and Health, Fitness, and Nutrition. Figure 4-9 shows the concentration of courses taken in 2011–2012.

In this second year, 77% of all participating students completed at least 90% of the course content and passed their courses. Of the students who successfully completed 90% of their courses, 91% received passing grades.

The extra effort invested in Math instruction by the ACCESS team at PGPCS and Connections appears to be paying off. Year 2 saw nearly a 10% improvement in passing rates among students taking Algebra 1, Geometry, and Algebra 2, from 64% to 70% passing. Program staff continue to explore ways to boost the Math passing rate even higher in future years.

At program launch, the ACCESS team had established a goal of at least 85% satisfaction with the program among participating students. Based on surveys in the fall of 2011 and spring of 2012, the program far exceeded that goal, with 95% describing the quality of the program as satisfactory or excellent, and 91% saying they would recommend the program to a friend.

"I am in the 10th grade, currently going to Largo High School. My reason for taking this ACCESS online class is to have my graduation credentials in order to go to college. I have spent three years in high school and apparently I should be in 12th grade. I was born in a country called Sierra Leone in the west part of Africa. I came to the United States on the 22nd of August 2010, and because of that I was placed in the 10th grade in order to meet the requirements to graduate from high school. I have been on the honor roll two times since I came to the United States last year in August."

— ACCESS Student, Spring 2011

The expanded ACCESS program also had a dramatic impact on graduation readiness. Approximately 120 seniors who participated in the ACCESS Online program were eligible for May 2012 graduation after successfully completing their courses. An additional 13 seniors are currently enrolled in online summer school and hope to be eligible for the August 2012 graduation.

One improvement that the ACCESS team hoped for but has not yet been able to implement is establishment of satellite sites in the northern and southern ends of the county to maximize learning time for students who were now spending almost an hour commuting from their base school to the ACCESS lab. Following renewal of the program for a third year, the ACCESS team is determined to continue its push for additional locations. Many stakeholders in Prince George's County are now advocating for expansion of the program in other ways as well, including more course offerings and a dedicated summer program.

In addition, ACCESS students are helping to drive the Connections curriculum and Connexus® platform into the mobile future. Some 89% of ACCESS students surveyed during 2011–2012 said they would use a mobile app for the program if available. In spring of 2012, Connections began providing mobile-friendly versions of many functions and courses, as well as experimenting with the delivery of LiveTutor via text message.

Lessons Learned for Future Blended Programs

Although the ACCESS program is still in its relative infancy, a number of lessons learned from this program have already impacted the approach used by Connections and PGPCS to blended learning, and may have implications for others exploring blended learning options for urban high school students.

- ***A continuum of options:*** The rapid evolution of the ACCESS program to include both full-time and supplementary offerings reaffirms the need for the kind of universal access to online/blended learning long promoted by organizations like the International Association for K–12 Online Learning (iNACOL). District leaders in PGPCS are now considering multiple full-time blended charter schools (fully virtual charter schools are prohibited in Maryland), while also looking for ways to expand ACCESS as a source of courses for students headed for graduation. Other districts may find it useful to embrace this portfolio approach to online/blended learning opportunity.
- ***Strategic roles for all teachers:*** Although the blended aspect of ACCESS was driven partly by the Maryland state requirement of 20% face-to-face instruction, the program has very intentionally developed critical, complementary roles for the in-person and online teachers. Program stakeholders believe that ACCESS outcomes have been positively impacted by the face-to-face Partner Teachers' energetic commitment to "the whole student," while the program platform facilitates data-driven collaboration between those teachers and their online, subject-focused counterparts. One important impact of blended learning should be that these various aspects of teacher best practices can be distributed and scaled to maximize student achievement.

- ***True anytime/anywhere learning:*** ACCESS students reported that they participated in their courses in the learning labs, at home, in the community, and at their base schools—and then asked for mobile access as well. Given the ubiquity of technology in these young people's worlds, combined with the continued development of content and instructional support that can live "in the cloud," emerging definitions of blended learning should focus less on the either/or combination of face-to-face and online and more on the vision of learning blended into all aspects of our lives.

About the Author

Mickey Revenaugh is Executive Vice President and co-founder of Connections Education, a pace-setting provider of online and blended learning since 2001. She has served on the Board of iNACOL since 2008, including two terms as Board Chair.

CHAPTER

5

Rocketship Education: A Model to Accelerate Achievement in Grades K–5

Rebecca Tomasini, CEO and Founder of The Alvo Institute

In 2006, John Danner and Preston Smith joined forces to co-found Rocketship Education (www.rsed.org). Danner, a former Silicon Valley entrepreneur, had recently finished teaching in the Tennessee public schools where he was stunned by the staggering achievement gap and lack of technology integrated in the school program. Smith, an acclaimed Teach for America teacher and successful school leader, was committed to bringing a rigorous education to the most marginalized students. The decision to open the first Rocketship school in San Jose began with another champion of children, Father Mateo Sheedy, Pastor of Sacred Heart Parish in San Jose, California.

In 1999, Father Mateo was asked to recommend children from his parish for the Juan Diego Scholarship program at Santa Clara University. Father Mateo was appalled to discover that, of the hundreds of children in his parish, none had met the educational requirements necessary to attend Santa Clara. Father Mateo reached out to community members to create a plan to increase high-quality educational options in Washington Guadalupe. Rocketship Education responded, and as a result, Rocketship Mateo Sheedy Elementary School was one of three schools launched in San Jose.

Rocketship Mateo Sheedy Elementary was established in 2007 and quickly demonstrated strong results in student academic achievement. The school's early success inspired more and more families to join the waiting list, thus demonstrating the need to continue to open additional schools to fulfill Rocketship's mission to eliminate the achievement gap.

Following Danner and Smith's leadership, Rocketship Education is building a national network of high-performing urban college-preparatory elementary charter schools. Rocketship's mission is to eliminate the achievement gap in public education by proliferating its network of K–5 charter schools in high-need neighborhoods throughout the country. Each Rocketship school has a clear and simple goal: that their students achieve grade-level proficiency by the time they graduate from elementary school.

Rocketship strives to eliminate the achievement gap in our lifetime so that no student's life is subject to the "destiny of demographics." They believe that the racial and socioeconomic disparity of educational outcomes and opportunities remains our country's greatest injustice, with crippling downstream effects on America's standard of living, societal welfare, and long-term viability. Across the Rocketship schools, serving approximately 500 students each, over 90% of students receive free or reduced-price lunch, and on average more than 75% do not have English as a primary heritage language. In 2010, of the 300 California schools that have more than 70% students receiving free or reduced-price lunch and 70% English Language Learners, the Rocketship network was the highest-performing group of schools that serve primarily low-income students.

Since 2006, Rocketship Education has demonstrated that the highest-quality education, using the best from traditional practices in combination with the most innovative tools and techniques, can lead to strong achievement results for under-served students and operate with fiscal responsibility in a cost-effective and self-sustaining way. Grounded in deliberate data-driven instructional practice, using technology as an instructional complement and support rather than a driver and definer, Rocketship is redefining elementary education and updating the traditional school model. Reflecting on over four years of data and student outcomes, Rocketship is launching several exciting innovations in the 2012–2013 school year. This chapter will highlight the fundamental elements of the Rocketship model, examine the outcomes, and preview the innovations and changes being launched in 2012–2013.

Rocketship attributes their success to three core values: Individualize, Lead, and Empower. By individualizing instruction with tutors and technology via their unique blended learning model, developing great classroom and school leaders through their professional growth and leadership development programs, and empowering parents to transform the political system, Rocketship will continue to drive world-class student achievement.

Equally important, Rocketship schools operate solely and sustainably on traditional public school funding sources without having to rely on philanthropic funds to cover operating expenses; this financial scalability removes a critical constraint to rapid growth.

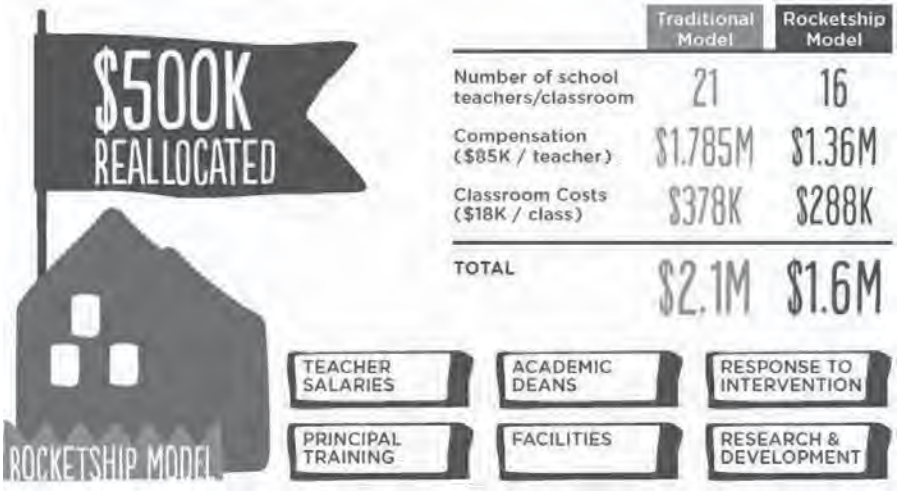

Figure 5-1 Financial Sustainability

After an initial investment in the development of a school, the Rocketship model is designed to allow public schools to provide a high-quality education on the low per-pupil funding in California, which can hover as low as $5,550 per student. The instructional design, utilizing a wider range of staff with a broader range of skills and pay schedules, allows administrators to reallocate funds and in some cases create cost savings. The Rocketship model allows for $500,000 in savings which are reinvested to increase academic achievement, leadership development, and teacher compensation.

Overview: Summary of the Rocketship Public School Model: Instructional Design, Faculty and Instructional Staff, Community Engagement, and Supporting Technology

The Rocketship Public School Model is a comprehensive school design that reinvents nearly every element of an elementary school, including the physical design, staffing plan, financial model, professional development, compensation, bell schedule, and instructional methods. At the core of the Rocketship model are people. Many educators expect to find that Rocketship has automated education with computers, but instead they find teachers, parents, students, administrators, and community leaders working together, informed by data and supported by the relevant technology, to help each child thrive.

Instructional Design

The Rocketship Public School Model involves a combination of the most effective data infused with traditional, teacher-facilitated, classroom instruction and online

instruction. Each student attends one block of Math, one block of Learning Lab, and two blocks of Literacy/Social Studies/Science programs each day (and participates in Response to Intervention (RtI), if needed). All students engage in 420 minutes of instructional time. Those minutes are spread between their two traditional classroom settings for Humanities and Math/Science and the Learning Lab. The amount of time spent in the different settings is different by grade level (Table 5-1).

Table 5-1 Minutes by Subject and Grade Level

Minutes by Subject and Grade Level				
Grade	**Humanities**	**Math/Science**	**Learning Lab**	**Total Daily Minutes**
K	200	120	100	420
1	200	120	100	420
2	200	120	100	420
3	200	120	100	420
4	240	120	100	460
5	240	120	100	460

A Modified Traditional Elementary Classroom Structure

At Rocketship, students move between two traditional classrooms and the Learning Lab (see Table 5-2a and 5-2b). Unlike traditional elementary schools where one teacher teaches multiple subjects to a classroom of the same students, Rocketship students are taught by subject-matter-expert teachers who all hold at least a bachelor's degree. Even at the kindergarten level, students move between different classrooms to engage with their subject-matter teachers. All instruction in the traditional Face-to-Face (F2F) classrooms is deeply data driven. Teachers use multiple types of student data to determine the most appropriate traditional instructional methods (i.e., reading aloud, direct instruction, interactive reading, and writing) along with assigning students to stations and student- or teacher-led group work. With the fall of 2012 rollout of Junyo (outlined later in this chapter), teachers will also be able to access the student achievement data from the Learning Lab activities, in addition to the data collected during traditional classroom instruction. As students circulate through station work in the classroom, they have an opportunity to work with their peers, and along the stations rotation, each group gets time to work with the teacher in a small group setting.

Many educators wonder how the logistics of moving elementary school students from class to class works. The deep school culture grounded in respect and order, coupled with the pride in being a "Rocketeer" (outlined in the Culture section), is a powerful guiding force enabling the class changes to happen quickly, safely, and without compromising instructional time.

The Learning Lab Provides Time for Remediation and Practice

The online learning at Rocketship happens outside of the traditional classroom structure in the Learning Lab. All students spend time each day

in the Learning Lab where they are able to receive remediation support and opportunities for individualized basic skills practice and acquisition.

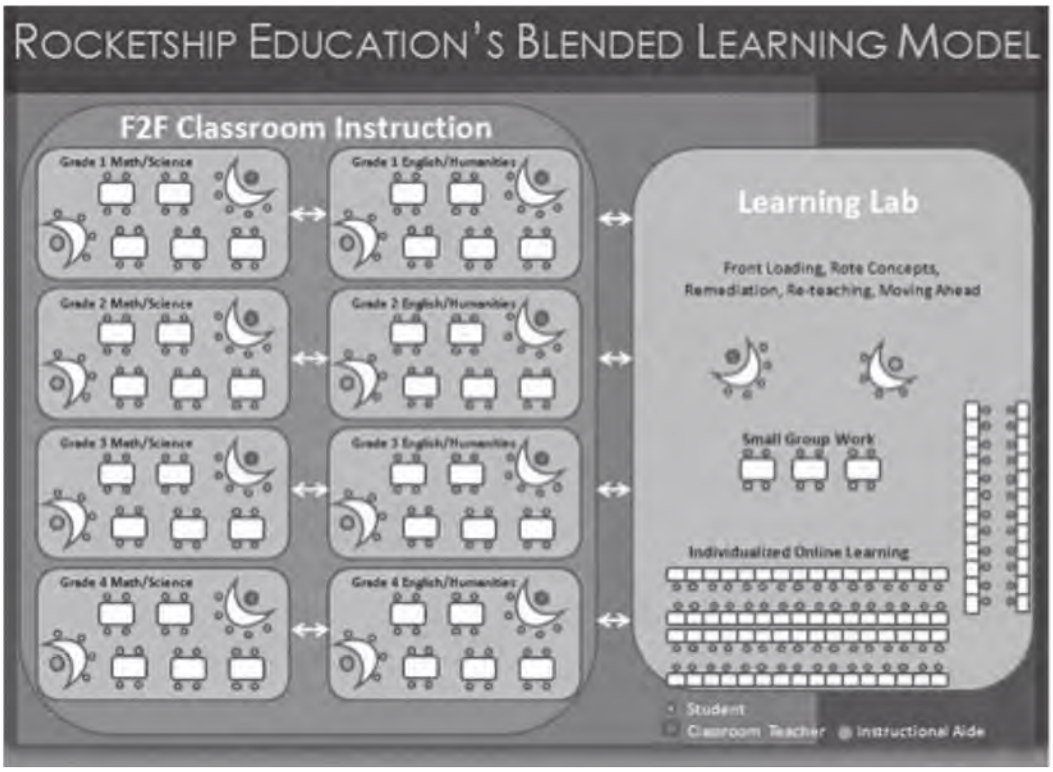

Figure 5-2 Rocketship Education's Blended Model

Individualized Learning Specialists, rather than certified teachers, oversee the Learning Lab. The model allows Rocketship to staff their schools with approximately 75% of the usual teachers and facility space that a typical elementary school occupies.

As students enter the Learning Lab, they sit at a computer where they initially encounter a screen from which they choose the content program specified for the day, based on their individual learning need. After selecting the program, students complete activities under the program's guidance. They also engage in offline activities, such as small group tutoring with an Individualized Learning Specialist and doing independent reading or enrichment programs.

Rocketship uses a variety of online content programs in reading and math during the Learning Lab time. The online content is selected with a rubric developed by the Rocketship leadership team (see Appendix B, Chapter 5). For reading, these include Curriculum Associates and Accelerated Reader. For math, content providers include DreamBox, ST Math, TenMarks, and Equatia.

There are on average 100–130 students in the Learning Lab at one time. The Lab also has three tutoring tables where the Individualized Learning Specialists can work with students in small groups. Rocketship believes that this new structure maximizes both human and technological

resources to create the most robust opportunities for deep differentiated instruction; students can work online or in small groups with the Individualized Learning Specialists.

Faculty and Instructional Staff

At Rocketship, the instructional program—and resulting financial efficiencies—begins with having a variety of highly qualified adults working to support each student's success. As in a surgical room, each individual is responsible for a specific set of tasks, freeing the teachers to focus on the instructional work they are specifically trained to do.

Individualized Learning Specialists

In the Rocketship Public School Model, Individualized Learning Specialists (ILS) provide critical one-on-one coaching and small group tutoring to students, as well as providing required supervision of students working in the learning lab. Typically, graduates of two- or four-year colleges with a passion for education and an interest in serving low-income communities, ILSs are managed directly by the Assistant Principal, being a major part of his/her job. As part of their ongoing management, ILSs will interact frequently with teachers to share data, strategy, concerns about and successes of particular students, etc.

For the fall of 2012 Rocketship:

- Hired: 7 full-time Individualized Learning Specialists per site (1 will be a para-professional specifically for Special Education students).
- Training: 10 days of initial training over the summer and then ongoing Professional Development (PD) on Fridays (sometimes with teachers at the same time) that covers behavior management, knowledge of instructional programs, tutoring skills, and procedures.

Teachers

Rocketship teachers are selected through a rigorous and competitive selection process. Because just over 80% of Rocketship teachers are from Teach for America (TFA), the Rocketship teacher selection process follows the process put forth by TFA, which recruits applicants at the top colleges and universities in the United States and facilitates a competitive and rigorous selection process that considers GPA, courses taken, written and interview performance, peer reviews, and references. Pleased with the top-notch caliber of the TFA teachers, Rocketship expects to see their number of TFA faculty rise to close to 90% in the coming year. Approximately 50% of the TFA teachers are current Corps Members, meaning they are in their first two years of teaching, while the other 30% plus are TFA Alum. Chief Schools Officer, Aylon Samouha, holds the rigorous TFA selection process as a cornerstone of Rocketship's instructional success. Admission into TFA is more competitive than admission into some of the nation's top universities, making the TFA faculty outstanding content developers and instructional faculty members, but it also puts top-notch candidates into the Rocketship Leadership Development pipeline. The strong in-house leadership development program prepares teachers for leadership

opportunities in Rocketship, including Academic Dean and Principalships—a pipeline critical to ensuring fidelity and quality in Rocketship's aggressive expansion model.

Academic Deans

Academic Deans, teachers from within the Rocketship system or external hires with experience as instructional coaches, play a critical role in the development of the teaching faculty. Academic Deans are the coaches and mentors for most teachers. Teachers officially report to the Principal, allowing the Academic Dean position to be a "safe," non-evaluative coach. Reporting directly to the Principal, the Academic Dean plays a critical role in driving academic achievement for students. The Academic Dean ensures academic excellence by working closely with the Principal to lead and implement the instructional vision for the school. The Academic Dean leads two primary streams of work: teacher coaching and professional development (PD). The Academic Dean directly coaches a number of classroom teachers, which includes conducting observation cycles, modeling lessons, co-planning lessons, real-time coaching, and providing support and resources aimed at increasing teacher effectiveness and leadership. The Academic Dean also leads the design and implementation of group teacher professional development and collaborative planning time. This individual provides staff with the appropriate resources and support to ensure that each Rocketship school's Rocketeer realizes 1.5 years of progress annually.

Assistant Principals

The role of Assistant Principal was added in the fall of 2011 to supervise the Individual Learning Specialists in the Learning Lab. Reporting directly to the Principal, the Assistant Principal plays a critical role in fostering a college-preparatory school culture focused on high levels of academic achievement. In the realm of ensuring academic excellence, the Assistant Principal manages Learning Lab staff toward student outcomes achieved through a highly individualized set of instructional methods, including online curriculum, reading center, and Response to Intervention (RtI). The Assistant Principal also directly coaches a few classroom teachers, which includes conducting observation cycles, modeling lessons, and providing support and resources aimed at increasing teacher effectiveness and leadership. Additionally, the Assistant Principal will manage key components of school culture, including arrival and/or dismissal, some transitions, lunch and/or recess, and will be ready to lead Rocketship Launch (a school-wide morning meeting) when the Principal is not available. The Assistant Principal role is designed to provide a preparatory experience for becoming a principal; as such, the Assistant Principal will engage in leadership training and should be prepared to step seamlessly into the Principal role when the Principal is not on campus or as a part of the leadership development program.

Principals

Principals are akin to Managers of the school. Teachers, Assistant Principals, and Academic Deans all report to the Principal, who is also responsible for instructional leadership and operational oversight. Their development path from being Rocketship teachers is detailed in the following Leadership Development section.

Leadership Development

The Rocketship Network Leadership Program Overview

The Rocketship Network Leadership Program is seeking our nation's most outstanding school leaders to join their movement to eliminate the achievement gap in our lifetime. They believe that to grow rapidly while maintaining quality and consistency across their network of schools, they must leverage the skills and talents of outstanding teachers and school leaders, while offering teachers an exciting career path and performance-based compensation. The Rocketship Network Leadership Program is an accelerated, multi-level program designed to support and prepare school leaders to open and successfully run high-performing Rocketship schools. Because of Rocketship's ambitious growth plans and their capacity to grow quickly, they are seeking leaders who can excel at the school level and who also have the potential to run clusters of schools as network leaders in the future.

Approach

The Rocketship Network Leadership Program is based on the belief that leadership potential, coupled with intense ground-level experience in their schools, is the best preparation to become a Rocketship leader. Just as the best preparation for teaching is being a teacher, the best preparation for school leadership is being a school leader. Rocketship Education makes significant, long-term investments to the Network Leadership Program, which is managed by a dedicated team of leadership development professionals with direct experience in teaching and school leadership, as well as deep training and credentialing in leadership development and management.

Figure 5-3 Investing in great school leaders provides great schools

Program participants first work as Teacher Leaders, Academic Deans, or Assistant Principals under the direction of current Rocketship Principals. In addition to learning directly through sustained collaboration with other program participants, Network Leadership candidates also receive one-to-one coaching and participate in a comprehensive, rigorous training curriculum that includes workshops from third-party experts in management, as well as instructional and personal leadership. For example, program participants will attend specialized leadership workshops on topics such as effective communication, performance management, and data-driven instruction and make visits to observe high-performing schools throughout the country.

Program Participant Selection and Placement Process

In evaluating program candidates, we value leadership potential and ability to drive results over all other factors. Consequently, some program participants with two to three years of teaching experience may be ready to become Rocketship Principals after a single year in the Network Leadership Program. In contrast, others with leadership experience in other schools may require two years or more to become a Rocketship school leader. Whether a person is just beginning his or her leadership pathway or is an experienced senior manager looking to make the transition to Rocketship, the program is designed to provide participants with the experience and coaching needed to run a successful Rocketship school.

Given the emphasis placed on potential over years of experience, applicants are asked to apply to the Rocketship Network Leadership program, and as part of the application process Rocketship's Leadership Development team will work with each applicant to identify the most appropriate Network Leadership track. There are three Network Leadership tracks.

1. Rocketship Emerging Leaders: A Two-Year Plus Pathway to School Leadership

   Rocketship Emerging Leaders are outstanding teachers who are interested in becoming school and network leaders. These classroom leaders have a track record of student achievement and have demonstrated leadership potential. Emerging Leaders come to Rocketship as teachers to become immersed in the innovative Rocketship model and also to participate in additional leadership experiences and workshops. They take on specialized projects at their school sites that may include teacher coaching, event planning, or community outreach and meet regularly with other teachers in the Emerging Leaders program. Rocketship Emerging Leaders will be among the first considered for Rocketship Rising Fellow and Rocketship Principal Fellow positions and serve as important leadership team members on their campuses.

2. Rocketship Rising Fellows: A Two-Year Pathway to Becoming a Principal

   The Rising Fellows Program is intended to prepare program candidates to become Principal Fellows in their second year of program participation, with the objective of opening or taking over an existing school after completion of two years in the Network Leadership Program. Rocketship Rising Fellows may serve as Assistant Principals or Academic Deans, depending on their own professional development needs. In these roles, they hone their management and instructional skills and become immersed in the Rocketship model. If placed as Assistant Principals, Rising Fellows are responsible for managing all non-teaching staff (including staff of Learning Lab), coaching a small group of teachers, and building school culture by sharing in the supervision of transitions, school arrival and dismissal, and lunch. If placed as Academic Deans, they are responsible for intensively coaching new and experienced teachers, as well as planning and executing professional development. In addition to the experiential learning gained from these roles, Rising Fellows also benefit from collaborating with a select group of Rocketship school leaders through training workshops, individual coaching, and hands-on opportunities, such as external school visits, 360 feedback surveys, and several weeks each year serving

as the full Principal. Rocketship Rising Fellows may also have the opportunity to found a new region and advance into regional and national leadership roles within the network.

3. Rocketship Principal Fellows: A One-Year Pathway to Becoming a Principal

Rocketship Principal Fellows train intensively for a year in preparation to run or take over a Rocketship school upon program completion. In this year, Principal Fellows are based at a single school site, serving as Assistant Principal and becoming immersed in the Rocketship school model. Principal Fellows are responsible for managing all non-teaching staff (including Learning Lab staff), coaching a group of teachers, and reinforcing school culture by supervising classroom transitions, school arrival and dismissal, and lunch. Additionally, they prepare to open and run a new Rocketship school or take over an existing Rocketship school in the next year by building community relationships, hiring staff, and creating a plan for their school. During their year long training program, Principal Fellows participate in many Rocketship Network Leadership events and also spend several weeks during the year serving as the full Principal. Principal Fellows are on an accelerated career track that may include the opportunity to found the first Rocketship schools in a new region; they may also move quickly into a Regional Director role or other senior management role within Rocketship.

School Culture

Being a "Rocketeer"

Visitors to any of the Rocketship schools often note the strong culture that permeates every aspect of campus life. Students are known as "Rocketeers," a celebrated status at Rocketship. All Rocketeers are committed to the core values of Respect, Empathy, Perseverance, and Integrity. The tenets of being a Rocketeer are on posters around campus.

The Rocketship Rocketeer Creed

- I am a Rocketship Rocketeer at home, at school, and in my community.
- I am respectful of myself, others, and the environment.
- I am responsible for my learning, actions, and achievement.
- I am empathetic to my world.
- I am persistent in attaining excellence.
- Together we are all Rocketship Rocketeers!

Every day, at all Rocketship schools, students, faculty, and staff gather in the common space and begin the day with "Launch" consisting of a song and dance about being a Rocketeer.

Other Elements of Rocketship Culture

Students wear uniforms in the purple and green school colors. College and university banners celebrating the schools of teachers and staff adorn classrooms and common spaces. Critical thinking is integrated into each classroom practice and is best summarized in the critical thinking posters in each room. The posters contain sentence starters that encourage high-order thinking, problem solving, and investigation. Starters include: "How would this be different if . . ." and "I wonder what would happen if I changed . . ." The sentence starters are used by all faculty and staff to reinforce a campus-wide approach to critical thinking.

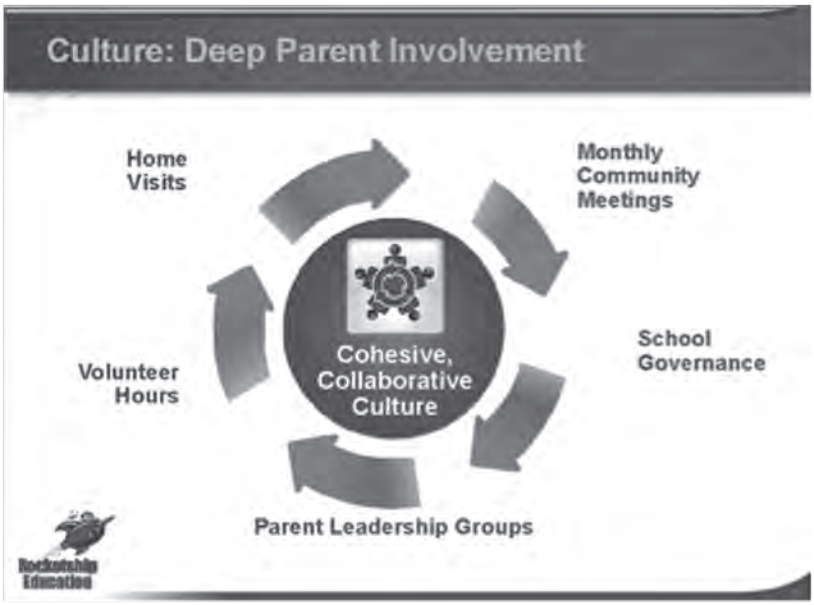

Figure 5-4 Cycle of Parent and Family Involvement

Community and Family Engagement

Community engagement and parent and family involvement are central to the design and success of the Rocketship school. A visit to any of the Rocketship schools will involve seeing parents at parent and family meetings or volunteering in the front office and around the school. In turn, faculty makes regular home visits. Rocketship sees parents as the strongest advocates in education reform. As voters, tax payers, and community members, it is the parents who are most deeply empowered as advocates for their children during their time at Rocketship and beyond.

Recently in San Jose, California, a charter was granted to a non-Rocketship charter called Alpha Public Schools. They will open a middle school in the fall of 2013 with students largely expected to come from the Rocketship elementary schools. This was the first charter this district had approved since 2003. The founder at Alpha, John Glover, attributes the surprising approval to the power of the parents who showed up en masse to demand that the school board create a high-quality option for their children entering middle school to follow through on the stellar education they received at Rocketship.

Technology to Support the Rocketship Public School Model

The Rocketship design is predicated on strong and regular data analysis, which, until the fall of 2011, was done manually using nothing more than Excel. With a desire to increase the access teachers have to live, real-time data, limitations in the current educational tool market—such as no common way to exchange data from different online curriculum providers, multiple sign-ons, and difficult to extract data—left Rocketship with few choices that met their unique instructional needs and design. Over the last three years, the Rocketship Team has embarked on several major technology initiatives that will fully support the unique design of Rocketship's blended learning model and in turn better support the other education reformers looking for integrated technology to support their blended instructional programs.

Online Curriculum Supports the Instructional Model

The technology development at Rocketship is built around the instructional design, unlike many models with instructional design built around the technology. Online content, which must be web-based and require no on-site server space, is chosen by the central office team with requirements from teachers and the technology team.

Rocketship employs a rigorous due diligence and evaluation process to identify the best of breed online programs and always conducts student trials before ever purchasing a program (see Appendix B, Chapter 5). During student trials, Rocketship evaluates programs based on differences in student engagement and academic outcomes. Rocketship has created rubrics and evaluation tools, which not only help Rocketship select quality online learning providers (OLPs), but also help push the ed-tech industry to enhance and create the most effective online tools possible.

Ultimately, Rocketship is most concerned with OLPs' efficacy in terms of student mastery of basic skills. Rocketship has identified the six most critical criteria, referred to as the "6 A's," which Rocketship thinks determine the effectiveness of an online program.

API	Assignability
Alignment	Adaptivity
Assessment	Affordability

After conducting student trials and deciding to move forward with a particular OLP, Rocketship still pushes vendors to further enhance their programs. Over time, as vendors align to common Micro-Core Standards and continue to integrate program enhancements that deliver more sophisticated adaptations and more directive assignability, student mastery results should become more predictable, allowing Rocketship teachers and administrators to "bank" on their students' academic growth in Learning Lab.

Using Technology to Manage the Different Online Curriculum Options

In 2011, Rocketship set out to build a technical infrastructure to combine their online learning programs into a single system. With the help of the Gates Foundation, Rocketship undertook building the Blended Learning Infrastructure (BLI), which served as a proof of concept for the importance of a technical infrastructure in an effective blended learning model.

In order to deepen the Rocketship created tools, better support the national growth, and ensure that all Rocketship schools have the most efficient and accurate way to manage multiple online vendors, Rocketship partnered with the innovative educational technology company Junyo in 2011. Junyo's technology will provide a more robust technical infrastructure, with even more meaningful, actionable Learning Lab data for Rocketship teachers; it will be launched in the fall of 2012.

Overview of Learning Flow That Informs the Technology Innovations:

1. Students begin each unit by taking a unit assessment online.
2. The Gap Identifier uses ongoing unit assessment data to identify gaps in knowledge.
3. The Gap Identifier checks the scope and sequence for a student's grade level in order to prioritize the order the gaps are worked on in the Learning Lab (by prioritizing lessons that are most aligned with the classroom curriculum).
4. Students log into the Student Portal.
5. Student Portal redirects them to the Scheduler.
6. The Scheduler is responsible for selecting an instructional method, which might be a lesson from an online program, a tutoring group, or the assessment platform.
7. The online programs/tutors/assessments get identity and enrollment information from Junyo.
8. Data generated by online programs/tutors/assessments is sent to Junyo via Junyo data integration Application Programming Interface (API).
9. Reports pull data from Junyo via Rocketship services API.
10. Teachers can log into the RISE (one-stop data reporting that includes all student data) in order to view and analyze student data.
11. The Gap Identifier uses the Junyo data to update the list of gaps for each student.
12. Teachers list an end date for the student's current unit, which tells the Gap Identifier whether it needs to reprioritize the list of gaps.
13. Go back to step 4 where students log into the Student Portal.

Rocketship Individualized Scheduling Engine (RISE)

The Rocketship Individualized Scheduling Engine (RISE) will serve as the data reporting website that sits on top of Junyo's technical infrastructure. Students, teachers, and Instructional Learning Specialists will be able to access, through a single portal, relevant student data and corresponding instructional next steps. The model in Figure 5-5 represents the path each stakeholder takes through RISE.

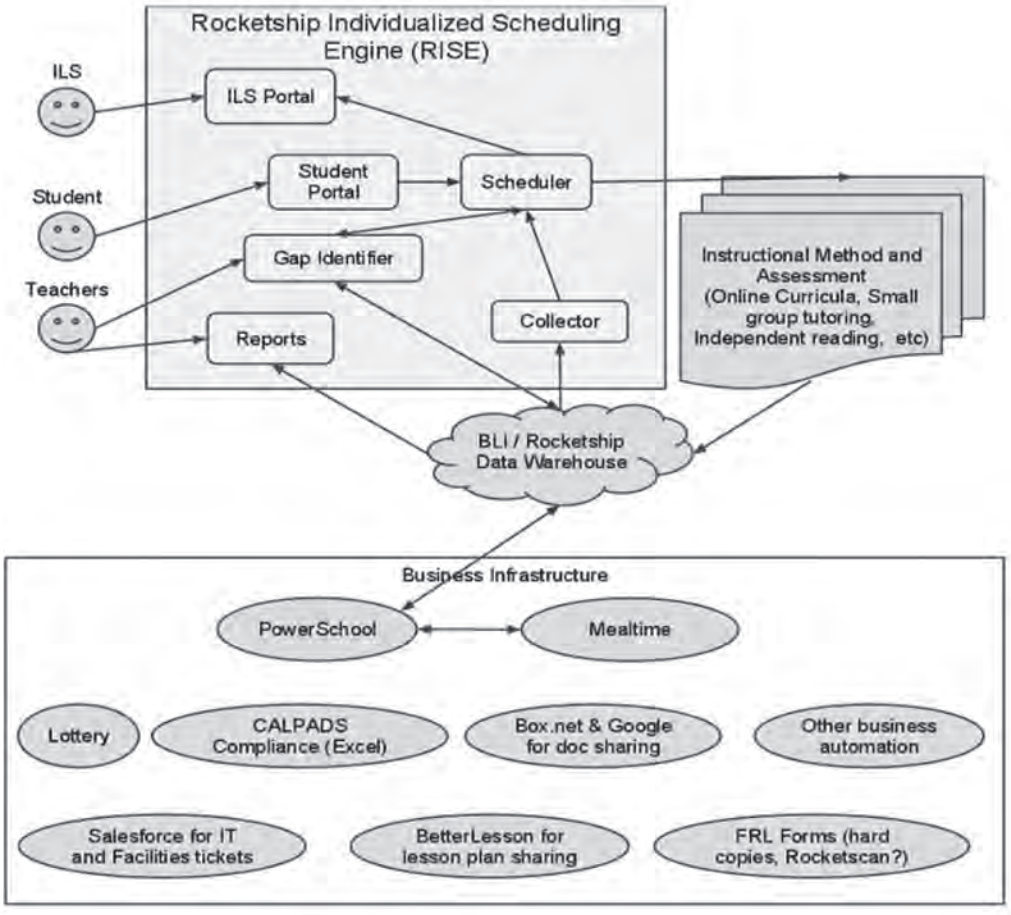

Figure 5-5 RISE/Junyo helps all stakeholders identify exactly what students need.

Defining the Terms in RISE/Junyo

Student Portal

The Student Portal is a single place where students log in and follow the instructional method that has been assigned to them by the Scheduler, which could include small group tutoring. It will be able to redirect students during their Learning Lab time.

- The portal will make it possible for students to start in one instructional method or program and then be automatically directed to another. For

example, they may start doing fact fluency online for 10 minutes, then be automatically redirected to Dreambox for 30 minutes, and then the screen will change to tell them to go to tutoring for the next 30 minutes.

- For an online program, they will be automatically forwarded to that program's web content.
- For independent reading, they will be given instructions to get their books and then will be forwarded to Accelerated Reader.
- For tutoring, they will be told to report to their tutor.
- For an assessment, they will be automatically forwarded to online assessments.

Individualized Learning Specialist Portal

The Individualized Learning Specialist Portal is for ILSs to log in and immediately see the information they need, whether their role is as Lab Coach or Tutor. This will give them important or time-sensitive notifications, such as improper student logins (e.g., logged in multiple times or not during their Learning Lab time), students struggling with programs, current and upcoming tutor groups, links to tutor curricula, etc.

Gap Identifier

The Gap Identifier looks for gaps in students' skill sets that may hinder their progress to master new material.

For Math: Using unit assessments as a starting point, the Gap Identifier creates a list of gaps for each student that will then be subsequently updated with assessment data coming from online curricula programs (via Junyo). A gap is defined as a specific Common Core micro-objective that has been proven by unit assessments and/or online curricula data to be one that the student has yet to master. The gap prioritization will be informed by the scope and sequence of classroom instruction. The actual sequence of the classroom and initial dates for when each unit is worked on is stored as part of the scope and sequence mapping. Math teachers will have access to a single input into the system; specifically, this input will be the estimated date of completion of the current unit. This will allow the Gap Identifier to know when to reprioritize the list of gaps according to when a new unit is going to be starting in the classroom.

For ELA: The ELA version of this will be based on the Strategic Teaching and Evaluation of Progress (STEP) Assessment, CORE (an off-the-shelf assessment provider), and High-Frequency Words (HFW) assessments. Different combinations of assessment scores will map to a specific eight-week tutor plan, where each day of every week is mapped out ahead of time. Teachers can select up to three focus areas for students out of the eight-week plan. The Scheduler will use these focus areas to help choose groups; however, the focus areas will have no effect on the eight-week tutor plan. Ultimately, literacy is expected to follow a similar logic to math, but Rocketship will not put their focus there until literacy programs become more effective.

Scheduler

The Scheduler will query the Gap Identifier for a given student to determine which micro-objective a student should work to master next. The Gap Identifier will be the process that actually determines the micro-objective that should be worked on. This is because it is best able to take into account goals that have been set by teachers.

The Scheduler will first schedule small group tutoring for that population of students. For ELA, these cycles will be based on eight-week data cycles. For Math, students will be regrouped on a more frequent basis according to what the Gap Identifier identifies as student gaps, which are refreshed based on daily assessment data coming from online programs and from small group tutors.

The Scheduler will also reference Curricula Coverage Maps to determine whether a particular objective is covered by any of the assignable online programs or tutoring curricula.

The Scheduler will also be responsible for scheduling pullouts with special education para-professionals, speech and occupational therapists, independent reading, and online assessments.

Reports

A reporting system will be built on top of Junyo for teachers, school leaders, and regional/national staff. This will be a central location online where all staff can go to view reports relating to assessments and online curricula data.

Collector

The Collector will store information related to data for Peer Assistance Review evaluations and time management in the Learning Lab. It tracks the amount of time (in minutes) that students have been assigned to a particular objective and how long it takes for them to reach mastery. It will also track things that are easily tracked within the Learning Lab. For example, Rocketship can track how much time elapses between when a tutoring time slot ends and when the students log back into the Student Portal.

The Technology Goals for 2012–2013

The new technologies being launched in the 2012–2013 school year are part of a strategic multi-year plan to develop technology that best supports the Rocketship Instructional Design.

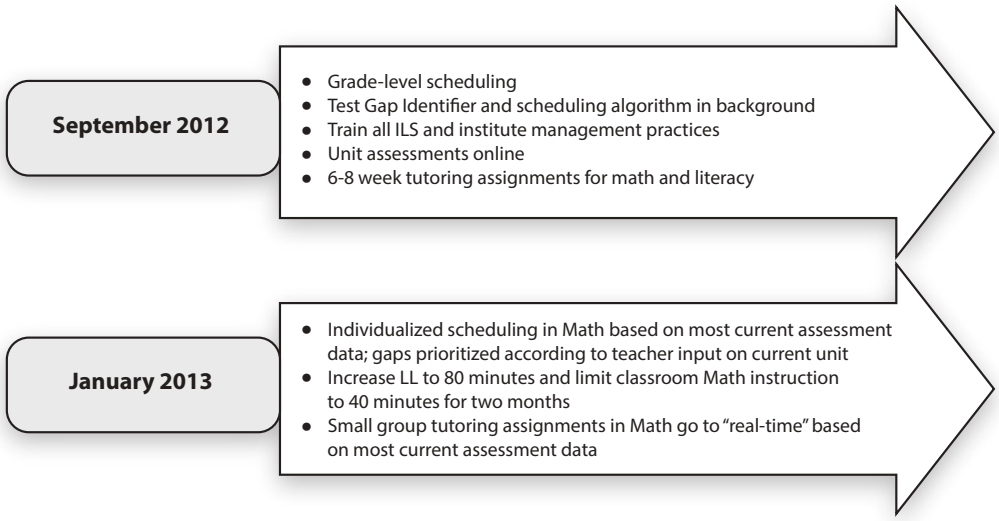

Figure 5-6 Technology Goals

Vision and Goals

Mission and Theory of Change

Rocketship believes that closing the achievement gap at a national level depends on building, executing, and scaling a 21st century school model that:

- Delivers exceptional and enduring academic results for students who emerge with the skills and characteristics necessary to succeed in college and life and to actively compete nationally and globally;
- Fosters deep parental engagement and ongoing advocacy for their child and for expanded educational opportunities for all children;
- Elevates the profession of teaching and school leadership, by enabling high-level work with students and families in a sustainable, highly rewarding manner with commensurate compensation; and
- Uses financial resources efficiently, so that schools are able to offer a more holistic education and serve all students without necessitating philanthropy.

The Rocketship Public School Model delivers on these four ambitions. It includes exceptional classroom teaching and individualized learning to enable students to master basic skills and higher-order thinking skills, and an operational approach that minimizes expensive, unnecessary redundancy, while supporting academic innovation and excellence. Rocketship believes they will be able to reach 1 million students by 2030 and inspire other school systems to adopt similar practices for high-quality, scalable impact on eliminating the achievement gap in our lifetime.

There are many things that make up Rocketship: parent involvement, highly qualified teachers largely from TFA, subject-matter teachers, the Learning Lab and ILP design, and a deep culture of being a "Rocketeer." Perhaps the most significant differentiators are their deep data use and fidelity to the blended learning model, which includes the Individualized Learning Plan, block scheduling, and a strategically designed Learning Lab.

The Rocketship Public School's Blended Learning Model vs. Other Blended Models: What's the Difference?

Rocketship's Co-Founder and CEO, John Danner, is emphatic that there *are* significant differences between Rocketship's Blended Learning Model and other models. He believes that many blended learning schools generally place technology first as the route to individualization. In contrast, the key concept of the Rocketship's Blended Learning Model is the Individualized Learning Plan (ILP), which details specific objectives that each student in the school should master over a short period of time. Technology is not the core concept of the Rocketship Public School Model anymore than textbooks are the key aspect of traditional schools. With the ILP as the guiding blueprint for a student's learning tasks, Rocketship's Learning Lab can then provide individual instruction through tutors and technology. Operationally, the biggest contrast Danner calls out between Rocketship's model and other blended programs is that Rocketship's model means *separating* computer time from classroom time, instead of combining the two. Figure 5-7 represents the individualized learning born of the interconnectivity of a variety of instructional practices in Rocketship.

Figure 5-7 Rocketship's interconnected Blended Learning Model.

The Learning Lab facilitates powerful, computer-based basic skills for reinforcement on an individualized basis. Outstanding teaching in the classroom provides the opportunity for developing students' higher-order thinking skills based on the foundation of basic skills acquired in the Learning Lab. The point of a blended school is not to save money but to allow teachers to specialize in the things they can uniquely do well, leaving most of the repetitive tasks to lower-paid employees and technology. Since classroom time and Learning Lab time serve different purposes, Rocketship does not put them together. They do, however, move Learning Lab data back to the teachers, in order to enable teachers to continue to modify students' Individual Learning Plans and resulting activities and tasks in the Learning Lab.

Rocketship identifies three main benefits of the Rocketship Public School Model: it's better for students, it's better for teachers, and it's better financially for schools. The California state testing results, along with the SRI Report on DreamBox use, support that the model is working for students. Great teachers love working in this model because in the classroom their time is freed to engage in critical thinking and problem solving with the students, and outside of the classroom there is a clear path for leadership development if they so choose. Rocketship believes that the benefit for teachers needs to be further evaluated to substantiate the claim with real data; for now, some of the very best teachers want to teach at Rocketship schools, which is strong, early evidence that this model is better for teachers. The cost savings and opportunities to reallocate funds while operating on the slim California funding speaks volumes to the financial health benefits that this model has for schools across the country.

But to achieve all three benefits, implementing the Rocketship's Blended Learning Model requires more than a bank of computers in the Learning Lab. It also requires much more focus on assessment and the unique needs of every student.

Regular Use of Relevant and Accurate Data is the Centerpiece of the Rocketship Model

The most important aspect of Rocketship's Blended Learning Model is the use of data in assessing student and teacher performance and also in evaluating the effectiveness of the online curricula. Without data insights, teachers cannot fully understand or exploit the capabilities of the Learning Lab, or specify and monitor their students' Individualized Learning Plans. Students are assessed every eight weeks. Equally important, data enables Rocketship administrators to track and evaluate teacher effectiveness. Correlating student achievement with online curricula is an important measure of the online curricula's effectiveness. But the "data-driven" blended learning organization requires an investment in computer-based reporting, integration of data from key online learning programs, and a process for teacher assessment that incorporates fact-based findings and comparative information as part of ongoing professional development.

A palpable deficit of all online learning programs is that they operate independently of each other and do not provide educators with a simple, student-centric means to correlate and combine results from different programs into a single "view" of each student's performance. To remedy this deficit, Rocketship's partnership with Junyo to build a technical infrastructure will integrate reporting from each of the major online learning programs and enable the creation of student-centric reports and analyses to exist in RISE.

What Data Are Gathered, Analyzed, and Used to Inform Instruction and Measure Efficacy?

Beyond the quizzes, etc., Rocketship has assessment reporting on the STEP assessment, Math benchmarks and unit assessments every eight weeks, mastery and growth data from online content, and the nationally norm referenced NWEA (North West Evaluation Association).

With the multiple data points, Rocketship uses a model of investigation that goes from student outcomes (what did they learn or not learn?) to student actions (what did students do that resulted in those levels of mastery?) to teacher actions (what did the teacher do or not do to lead to those student actions?) to teacher underlying knowledge, skills, and mindsets (what needs to be developed to influence student actions and outcomes most?). This methodology is the basis of Rocketship's coaching model with teachers and the reflection that the teachers do themselves when looking at the data.

Through RISE/Junyo, teachers see what students have mastered and where they are struggling. With this data, teachers can determine the appropriate instructional experience for students and can better monitor how students are progressing toward the skills assessed by the school-wide and state assessments. The model prioritizes which students to focus on and which concepts to focus on for the entire grade/subject. Perhaps the most important instructional data comes from Common Core standards, which assesses things that drive the next set of instructional activities. Questions the data help to answer include: "Do you know it or don't you?" What did the student pick if they got the question wrong? What underlying misunderstanding does that wrong answer imply?

The Bell Block Schedule at Rocketship Moves Students through Content-Expert Teachers

Rocketship's innovative Bell Block Schedule is essential for making the Rocketship Public School Model work successfully (Table 5-2a and 5-2b). Just as in high school, under the Bell Block Schedule, Rocketship K–5 students move to different classrooms and teachers throughout the day, with focused class time (and a different teacher) for English Language Arts/Social Studies and for Math/Sciences.

Typical School

- Four generalist teachers
- 4 classrooms

	First Grade Class 1	First Grade Class 2	First Grade Class 3	First Grade Class 4
1st Period	Teacher A	Teacher B	Teacher C	Teacher D
2nd Period	Teacher A	Teacher B	Teacher C	Teacher D
3rd Period	Teacher A	Teacher B	Teacher C	Teacher D
4th Period	Teacher A	Teacher B	Teacher C	Teacher D

Table 5-2a Typical School Schedule

Rocketship

- "75/25" mix
- Three specialist teachers
- One lab staff
- Three classrooms
- One learning lab

	First Grade Class 1	First Grade Class 2	First Grade Class 3	First Grade Class 4
1st Period	Literacy Teacher A	Literacy Teacher B	Math Teacher C	Learning Lab
2nd Period	Literacy Teacher A	Literacy Teacher B	Learning Lab	Math Teacher C
3rd Period	Math Teacher C	Learning Lab	Literacy Teacher A	Literacy Teacher B
4th Period	Learning Lab	Math Teacher C	Literacy Teacher A	Literacy Teacher B

Table 5-2b Bell Block Schedule

While somewhat complex to implement, the Bell Block Schedule offers many benefits. First, as subject-matter specialists, even new Rocketship teachers can become proficient rapidly and are able to develop powerful, actionable insights and methods to improve their students' academic performance. Second, the Bell Block Schedule allows three teachers to teach four classes of students (without increasing actual class sizes), which results in a reallocation opportunity of approximately $100,000 for every four classes of students, which at Rocketship is reinvested in professional and leadership development, enrichment programs, the Learning Lab's software and hardware, and even in higher teacher salaries. Third, the Bell Block Schedule ensures that students spend dedicated time each day in the Learning Lab (where the computers are located), focusing exclusively on their individual learning needs and on strengthening basic skills mastery.

Results and Outcomes

Strong Student Achievement Data Suggests the Rocketship Public School Model Works

Rocketship aspires for students to graduate from fifth grade at Rocketship on a new trajectory. Due to the enduring academic and personal growth they experience at their schools, Rocketeers are well placed along a path to expanded opportunities in middle school, high school, college, and life. As scholars, Rocketeers master basic skills and also build higher-order thinking skills above grade-level expectations. As citizens, Rocketeers strengthen the values, dispositions, and life skills that will support their hard work and future success. Rocketship believes that these two areas of growth—academic and personal—are mutually reinforcing. Academic growth accelerates when students have

strong personal values and display traits such as resilience and love of learning; these characteristics are also built up and reinforced in the pursuit of rigorous academic goals.

Basic reading and math skills must be mastered as a foundation for academic success in grade school and college, and demonstrating this mastery on standardized tests opens doors of opportunity for students. Thus, Rocketship expects their students to show high levels of mastery and growth on standardized tests, including state exams and NWEA. But students who experience enduring academic success must also build higher-order thinking skills upon their basic skills foundation. Higher-order thinking is comprised of several essential components.

- **Critical Thinking:** the set of skills required to succeed at higher levels of Bloom's taxonomy, including the analysis of data, synthesis of information, and evaluation of arguments
- **Problem Solving:** building on a foundation of strong critical thinking, problem solving involves using insight and creativity to solve complex problems such as applying familiar strategies in multiple or unfamiliar contexts
- **Metacognition:** the ability and disposition to explore the thinking and learning process, explain how and why a particular strategy was chosen, and to explain the rationale behind a particular viewpoint, including supporting one's claims with evidence

Through this pursuit of rigorous academic growth, Rocketship also strives to foster their students' personal growth, which includes the dispositions and skills necessary to persevere and succeed in and out of school. As Rocketship knows, success in school and life can be influenced greatly by emotional and social development, including self-regulation, perseverance, relations with others, and decision making. These cognitive processes are often called "executive functioning," and Rocketship aspires for their students to develop most in the following areas that behavioral research emphasizes as critical to adolescent growth.

- **Sense of Self:** an understanding of one's own strengths, abilities, emotions, and identity that contribute to positive self-esteem and a sense of purpose; this might look like a student self-regulating an emotional response in order to facilitate rather than interfere with a particular task at hand
- **Relationship and Social Skills:** understanding and appreciating the emotions and perspectives of others and developing positive relationships with diverse groups including peers and adults; developing the ability to cooperate effectively, resist social pressure, resolve conflicts, and seek help appropriately
- **Commitment to Learning:** pursuing goals and taking responsibility for self-development academically, socially, and emotionally; having a sense of curiosity, interest, and involvement in learning and advocating for one's own learning at Rocketship and beyond

To realize their vision for academic and personal growth, Rocketship is pioneering the Rocketship Public School Model, to ensure that each Rocketeer's education is individualized efficiently and effectively. Its Learning Lab combines online curricula, independent reading,

and tutoring (based upon an RtI model) that strengthens basic skills at the appropriate level for each student. Using this highly differentiated set of instructional methods translates into increased student mastery of basic skills and generates data that teachers can rely on in their own classroom instruction. All aspects of Rocketship's vision—basic skill mastery, higher-order thinking, and personal growth—are reinforced throughout the school day in both classrooms and lab settings, but their vision is for the Learning Lab to provide the "lift" so that classroom instruction can focus primarily on higher-order thinking and personal growth. Particularly during classroom instruction, Rocketship expects Rocketeers to be engaging with rigorous academic content at high levels and pursuing this content with urgency and passion.

Results on the California State Tests

Rocketship results on the California high-stakes tests have been consistently high and consistently outperformed the neighboring charter and traditional public schools. In 2011, the Rocketship network of schools exceeded the state and neighboring district performances on California state tests (Table 5-3).

Table 5-3 Rocketship Education California State Testing Results, 2010–2011

ELL	ELA			Math		
	N Students	N Advanced or Proficient	% Advanced or Proficient	N Students	N Advanced or Proficient	% Advanced or Proficient
Rocketship	577	342	59.3%	577	478	82.8%
California	1,268,010	490,236	38.7%	1,268,619	618,461	48.8%
San Jose Unified	6,939	2,722	39.2%	6,936	3,291	47.4%
Alum Rock	6,088	2,527	41.5%	6,086	3,286	54.0%
Franklin-McKinley	5,347	2,468	46.2%	5,346	2,954	55.3%

SPED	ELA			Math		
	N Students	N Advanced or Proficient	% Advanced or Proficient	N Students	N Advanced or Proficient	% Advanced or Proficient
Rocketship	40	14	35.0%	40	18	45.0%
California	420,920	145,488	34.6%	423,047	154,907	36.6%
San Jose Unified	1,842	636	34.5%	1,852	644	34.8%
Alum Rock	1,204	377	31.3%	1,204	436	36.2%
Franklin-McKinley	781	245	31.4%	782	272	34.8%

ELL	Rocketship	California	San Jose Unified	Alum Rock	Franklin-McKinley
ELA	59.3%	38.7%	39.2%	41.5%	46.2%
Math	82.8%	48.8%	47.4%	54.0%	55.3%

SPED	Rocketship	California	San Jose Unified	Alum Rock	Franklin-McKinley
ELA	35.0%	34.6%	34.5%	31.3%	31.4%
Math	45.0%	36.6%	34.8%	36.2%	34.8%

*Based on updated CST data released in March 2012 for 2010–2011 SY testing

2013 Goals for Student Outcomes

For 2012–2013, the Rocketship Team has high goals for their network of new and legacy schools.

External Evaluation Finds Math Online Instruction Effective

Rocketship conducted an RCT (Randomized Control Trial) with the research group SRI, involving all students in kindergarten and first grade in each of the three Rocketship schools in operation in 2010–2011. Students were randomly assigned to one of two conditions: (1) online mathematics instruction supplementing face-to-face mathematics instruction (treatment) or (2) face-to-face mathematics instruction only (control). Rocketship randomly assigned individual students, separately within and by grade level (K and 1), at a 4 to 1 ratio to the treatment and control groups.

The experiment spanned 4 months (mid-October through mid-February) and included 70 days of instruction. Students in both treatment and control groups were scheduled to receive 100 to 110 minutes per day of face-to-face mathematics instruction in their classrooms. Students in the treatment group were scheduled to receive an additional 20 to 40 minutes per day of online mathematics instruction using DreamBox, with most sessions lasting 40 minutes, while the control students from the same class received online literacy instruction.

The findings revealed that there were statistically higher gains (5.5 percentage points from 17 hours of intervention) in overall math scores for students using DreamBox than those who did not. With 17 hours of time using the online curriculum DreamBox, which is not teacher-directed instruction, students did earn 5.5 points better than those with the time allocated to more traditional teacher led instruction (for example, if a student typically would have gotten in the 50th percentile, they would be in the 55th percentile). Rocketship is aware of no other online curriculum, or teacher-led approach, that yields such results with only 17 hours of student time.

Rocketship Education's National Expansion

To develop their infrastructure development, in 2009, Rocketship received a $5 million grant from Reed Hastings and the Charter School Growth Fund for creation of its first seven schools in San Jose. Rocketship opened the sixth and seventh of these schools in August 2012. To further the expansion of the Rocketship schools in San Jose, Rocketship received 20 charters from the Santa Clara County Office of Education. When all 20 schools are open, it will bring Rocketship's reach in San Jose to 28 schools serving 15,000 students with diverse backgrounds and learning needs.

Figure 5-8 Rocketship's Expansion Lens

In 2010, Rocketship decided to accelerate their plans for expansion and raised an additional $6 million from the Charter School Growth Fund and $1 million from the Edythe and Eli Broad Foundation, in order to finance the national office infrastructure required for expansion.

Rocketship's national expansion plan is dedicated to serving students living in an achievement gap—the students from ethnic minority or disadvantaged socioeconomic groups who are grossly under-performing other students. Regions are selected based on the area's political support, the ability to get a charter for a cluster of at least 8 schools, sustainable facilities, a strong presence of Teach for America Corp Members, and funding to support the development of a regional office.

Rocketship has received 8 charters to open in Milwaukee, Wisconsin, where the first school will open in the fall of 2013. Milwaukee was a target city for Rocketship because the city has one of the nation's largest achievement gaps in the country.

Additional charters, each granting 8 schools, were granted in New Orleans, Nashville, Memphis, and Indianapolis.

Implications

It's Actually Not about the Technology: A Program Based on Great Data-Driven Instruction

Many people who hear about the Rocketship model assume the program's success is tied to technology. It is not.

Many programs begin their development work by selecting online curriculum and content and finding an off-the-shelf or customized technology provider to build complex and expensive to maintain proprietary systems. Too many educators who want to replicate the Rocketship model focus on the technology and online curriculum and content—spending thousands, sometimes millions, of dollars purchasing new technology—before they even understand the instructional intention the technology should support.

True, impactful, blended learning is not as simple as adopting a few online content providers and relegating an hour of student instructional time to a computer lab. It is also not as simple as issuing iPads to all students or installing Smart Boards in every classroom. While great support tools, these tools need a well-designed instructional plan to support. Despite the many technology innovations being launched in the 2012–2013 school year, Rocketship's model is not about having the latest and greatest technology. It is about using accurate, relevant data and well-designed Individual Learning Plans to create a variety of instructional experiences that best meet the needs of each student.

Design the instructional tenets first and then find the technology and curriculum that support the vision. So much of Rocketship's success in student achievement scores came long before the technology innovations that are being launched this school year, which proves that, while technology is a critical tool and support of blended learning, it is in no way the foundation and core.

Hire, Support, and Develop the Best Teachers and Leaders

The biggest financial investment should be in hiring and retaining the absolute best teachers. A school looking to launch a blended program needs to have a faculty and leadership team well versed in a number of areas such as culture building, community engagement, and instructional methods, but perhaps the most important skill is in how to analyze achievement data, and knowing how to move from data to instruction for each student. Deep data work is not yet an integrated part of most teacher training programs, making this a difficult skill set to find in large groups of teachers. While there are technology platforms that can help make the data work more efficient, there is no technology that can replace the deft analysis and decision making of a highly qualified teacher.

Supporting the development and growth of teachers with regular, meaningful professional development is critical to their satisfaction in the workplace, which leads to increased retention,

as well as the ongoing success of their students. A strong professional development program also ensures a pipeline of future school leaders who understand the school's program design.

Ask questions about how a student's skills will be evaluated and assessed. How will the instructional faculty work together to look for trends and support a comprehensive instructional support plan for each student? How will the differences in traditional F2F instructional times impact other programs or opportunities for instruction and intervention? How can a variety of highly trained adults be incorporated into the student's instructional experience?

Work within the Community

Every Rocketship school opened to date—and every Rocketship school still to be opened—is done so with strong, authentic community building and parent and family involvement. Rocketship believes that early and regular community engagement is a cornerstone of building and running a school that best supports the students and their families. Teachers make regular home visits. Schools hold frequent family meetings, advisory boards, and informational sessions. Parent and family volunteers are at the school during the school day and at school events on nights and weekends. Community leaders are invited to school events and meetings. The schools are integrated into the communities that they serve.

Effective Designs Are Highly Iterative: Need for Cycle of Continuous Improvement

One of the greatest strengths for Rocketship has been the ability to reflect, evaluate, and refine. The Rocketship Public School Model has gone through significant changes in many elements since first launching in 2006. Everything from bell schedules to online content is evaluated regularly for effectiveness and the ability to support strong student achievement. The leaders and team in a new program must be willing and able to assess risks, mitigate when possible, and adjust and refine when things do not seem to be serving students.

What Rocketship and the Blended Learning Movement Needs from Vendors of Instructional Content and Data Management

The technology innovations being launched in 2012–2013 will allow Rocketship Learning Labs to be scalable. Automated single sign-on and provisioning eliminates a very large management task for their staff and allows staff members to focus on instruction and classroom management. The data integration piece allows us to pull mastery data about students in a vendor-agnostic fashion. Ultimately, this leads Rocketship to have the ability to always bring in the best content for their students with little or no administrative overhead.

Of all the technological impediments schools embarking on a blended model will encounter, the two most serious are the lack of high-quality, modular content that can export data to a single system and the availability of a data system that can effectively manage the data. Rocketship openly shares their online content selection rubric

(see Appendix B, Chapter 5) to encourage other educators to also hold vendors to high standards. Rocketship particularly encourages educators to use their economic buying power to drive a market with high-quality, engaging, and rigorous content along with common ways (APIs) to transfer data from one place to another.

Most schools will not be able to dedicate resources to developing a customized data management tool. As schools work with technology vendors, Rocketship encourages schools to take the lead in vendor discussions with clearly articulated instructional design, which the technology will support. Too often, schools do not make purchases that support the instructional goals over the long term.

Disrupt and Innovate

If there is a single lesson to be learned from Rocketship, it is to disrupt in order to innovate. Look at every aspect of your traditional instructional and school model and look for opportunities to improve. Do not be tethered by thinking "this is how we always do things."

The list of impediments to building an effective blended learning model is long. Many educators let these impediments keep disruptive innovation at bay—waiting for the "quick fix." Rocketship has shown that technology, or the lack thereof, does not need to stop designing more efficient instructional data-driven practices and innovations. They have also proven that innovation comes with trial and error—and with failures and triumphs. Flawed bell schedules, education codes, and facilities limitations are but a few of the hurdles Rocketship has had to overcome. Innovation is iterative and needs a strong data-driven cycle of continuous improvement. The innovators who take on blended learning also need to be prepared to roll up their sleeves and do work they may not have done in traditional settings.

This chapter was written with content support from Charlie Bufalino, National Development Associate at Rocketship Education, and Aylon Samouha, Chief Schools Officer at Rocketship Education.

About the Author

Rebecca Tomasini launched The Alvo Institute in 2009 to help educational organizations integrate relevant data and technology into effective traditional practices. Before Alvo, she was the Sr. Director of Instruction and Evaluation for the on-line content providers KC Distance Learning and K12, Inc. She was a member of the California Governor's Data Advisory Board and the founding Director of a data technology support program under the California Charter Schools Association which now supports over 300 charters in California. As a classroom teacher working with at-risk high school English Learners in Los Angeles County, California, she was awarded the California Association of Bilingual Educators' Teacher of the Year Award in 2002. Prior to dedicating her work to education, Rebecca spent four years in private sector finance, research and mergers & acquisitions with companies including Goldman Sachs, Deutsche Bank, Cushman & Wakefield. She has been an advisor to the Hawaii Department of Education, an Adjunct professor and Advisory Board member at Claremont Graduate University's School of Education, Portland State University, and Lewis & Clark College. She holds a BA in English from Smith College, a MA in Renaissance Studies from The University of London and a MA in Education and Community Development, Claremont Graduate University, School of Education.

CHAPTER

6

A Blended Learning Model for Primary Grades KIPP LA Schools

Mike Kerr, Founding Principal,
KIPP Empower Academy

KIPP Empower Academy features a blended learning model in which small groups of students rotate between teacher-led instruction and online learning. Students access various content providers through a single sign-on platform, and all data from online learning and teacher-directed instruction is housed in an easily accessible teacher dashboard.

Context

KIPP (Knowledge Is Power Program) is a network of more than 125 high-performing public charter schools located in under-served urban and rural communities across the United States. KIPP schools are free, have an open enrollment, and are made up of predominantly African American and Latino students from low-income families. KIPP schools feature an extended school year and longer school days, a focus on student achievement results, high expectations for academic and character development, and a goal of advancing students to and through college. Since its founding in 1994, KIPP students have had a higher college completion rate than the national average and four times higher than the rate for students from under-served communities.

Located just two blocks away from the epicenter of the 1992 Rodney King riots, KIPP Empower Academy (KEA) exists to provide families in South Los Angeles a real choice in an area where the public schools have been underperforming for decades. KEA's instructional program is built on the strong commitment to putting every possible resource toward ensuring that every child receives individualized instruction to meet his or her diverse learning needs. Teachers are proactive about helping students learn their history and culture, in addition to what is recommended in the state standards. The school's mission advocates strength in "Mind, Body, and Spirit," ensuring that children's social, emotional, and psychological development is progressing at a healthy pace. High-quality teachers, parent empowerment, effective interventions, and character strength must all be aligned in order to prepare our students for success in the 21st century.

KEA is chartered through the Los Angeles Unified School District (LAUSD) and is co-located with another LAUSD school. Students who attend KEA hail mainly from the neighboring Los Angeles communities of South Central, Crenshaw, Inglewood, and Compton.

Roughly 85% of KEA students are African American and 15% are Latino. Ten percent of students receive special education services and another 10% are English Language Learners. Ninety-two percent of KEA students qualify for free- or reduced-price meals.

For the 2012–2013 school year, KEA serves 330 kindergarten, first, and second grade students, and will add one grade each year until it reaches capacity in 2014 with 550 students in kindergarten through fourth grade. In order to recruit as many under-served students as possible, KEA targets local preschools and Head Start facilities that serve predominantly low-income families, instead of solely relying on advertising. Students are selected through a lottery system in which parents submit a simple enrollment form consisting of their child's name, address, and date the form was completed. On the day of the lottery, an independent, unaffiliated lottery official simply reaches into a box and pulls the enrollment forms out one at a time. Therefore, all applicants have an equal chance of matriculating, and there is no fee involved in the process. Each year, KEA receives more enrollment forms than there are spots available. As a result, the school has about 50 students on each grade's waiting list.

Strong teachers and administrators are the cornerstone of KEA's success. All KEA teachers and staff members have previously worked in public schools in New York City, Detroit, Philadelphia, Chicago, and in the greater Los Angeles area. Three-quarters of the staff are people of color and have a combined average of five years of experience. Each staff member chose to work at KEA because he or she wants to help prove what is possible in public education.

For students entering high school in South and East Los Angeles, just 10% will pursue a college degree and fewer than 4% will actually graduate. KIPP LA Schools (KIPP LA), a nonprofit organization operating seven public charter middle and elementary schools in these under-served communities of Los Angeles, is determined to provide what is possible in public education. By growing from just two original middle schools in 2003 to 14 elementary and middle schools by 2016, KIPP LA aims to double the number of college graduates in the South and East Los Angeles communities.

In the fall of 2009, KIPP LA was facing the dire circumstances of California's budget crisis that resulted in significant funding cuts in education. I had recently relocated to Los Angeles to found one of KIPP LA's newest elementary schools, KIPP Empower Academy, after having previously served for five years as the founding principal of the Achievement First Crown Heights Elementary Charter School in Brooklyn, New York. By October 2009, I learned that California's Class-Size Reduction funding had been discontinued for new and expanding charter schools. Consequently, KEA would lose $107,100 per grade level in expected public revenue in its first year and more than $400,000 by its fourth year. Furthermore, in reaction to the state's economic crisis and despite the fact that California's per-pupil expenditures were already among the lowest in the nation, even deeper cuts were made to the state's education budget. As a result, KEA faced a loss of roughly $200,000 in expected revenue for its first year of operation.

As I considered the possibility of adopting a blended learning model, my primary concern was preserving the individualized, small group instructional approach for KEA, a pedagogical approach that utilizes a two teacher per classroom model so that students could receive differentiated instruction in the core content areas with a low student-teacher ratio. I had successfully implemented such a model in my previous administrative role in New York City largely because my school received over $13,000 in per-pupil public funding and could actually afford two teachers per classroom. As a result of the strong student achievement results my school had achieved—95% of third graders and 99% of fourth graders scored proficient on New York state exams—and my strong views against the antiquated, yet widely used whole-class instructional methodology, I wanted to pursue a similar approach for KEA. After considerable reflection, I concluded that a rotational, blended learning approach could provide the best of both worlds—KEA would be able to overcome deep funding cuts while preserving the small group, individualized instructional model. Now, however, instead of exclusively utilizing two teachers to supply small group instruction, computers would play a beneficial supplementary role as well.

Overview

Before KEA could open its doors for its two-week summer school program in August 2010, I needed to determine how a rotational model would work for four- and five-year-olds. As I researched other successful blended learning schools, I found that most served high-school-aged students and most content providers who supply content to blended learning schools have mainly targeted this demographic. Finding content providers that produce age-appropriate, interactive, and relatively inexpensive programming with enough content to engage primary-aged students for 25 to 30 minutes per computer session for an entire school year proved problematic. In fact, I found that there was not one content provider that had sufficient content for students in all of the core content areas of reading, writing, math, and science. Therefore, KEA would have to utilize a few different education software providers to provide enough content to meet students' diverse learning needs.

Incorporating different content for each subject area would mean that students would have to learn various usernames and passwords for each program used, which would be far too challenging for primary-aged children. Moreover, if students used several different content providers, the data collected from these providers would be housed separately at each program's website. To overcome these challenges, KEA would need to have a single sign-on infrastructure (Launchpad) in place that would allow students to access disparate content providers with one simple, age-appropriate username and password.

Additionally, KEA would need a dashboard on the back-end to collect data from each content provider in a single repository. Thus, Education Elements (Ed Elements), a newly formed company based in Northern California, was enlisted in the spring of 2010 to provide these customized services. Anthony Kim, President of Ed Elements, assembled a team that would create the single sign-on Launchpad, as well as the teacher dashboard data repository within roughly five months before KEA could open. It was certainly a prodigious undertaking.

Early Lessons Learned

With time quickly running out, the progress of Ed Elements and KIPP LA to speedily prepare the blended learning model was further inhibited by the lack of a true project manager who would act as a progress monitor. Once this was realized and a project manager was assigned, Ed Elements and KIPP LA established a clearer division of labor accompanied by specific benchmarks for when certain aspects of the project needed to be completed.

Anthony and his team worked with Brain Honey to build the requisite infrastructure for KEA. Meanwhile, various members of KIPP LA's School Support Center (SSC) and I worked tirelessly to ensure that the logistics were in place to support a full rollout for the beginning of KEA's mandatory summer school program. However, we again had to overcome significant hurdles. As per LAUSD policy, charter schools sharing facility space cannot begin accessing their school sites until ten days prior to opening. As a result, my staff, along with a team from the SSC led by Director of Technology Matthew Peskay, had less than two weeks to arrange the furniture, image the computers, test the Internet bandwidth, and prepare the classrooms for the arrival

of 116 bright-eyed kindergarten students. And yet, by working long hours, the Ed Elements and KIPP LA teams completed the preparations in time and KEA opened its doors on schedule.

In the first few days of school, everything appeared to be working according to plan. The students were introduced to a nurturing and rigorous learning environment, and the daily rotational schedule was executed seamlessly for the first few weeks of school. Despite this ostensible early achievement, a few serious challenges threatened the progress of the blended learning model.

First, due to all of the challenges inherent in collecting many different types of exported data from the various content providers, Ed Elements found it difficult to reconcile these data in a timely fashion for the complete teacher dashboard to be operable. For the dashboard to be a truly useful tool providing real-time data for teachers on how their students were progressing through the various computer programs, Ed Elements would need more time to complete the project. Therefore, I decided that for the first year of operation, it would be sufficient for my administrative team and my teachers to utilize the individual content providers' websites in order to monitor students' academic performance.

Second, at the last minute, the provider selected to deliver math content for the blended learning model decided that, contrary to what they had previously stated, they would not be able to export data from their website to Ed Elements' teacher dashboard unless KEA could provide an additional $56,000. Needless to say, KEA could not afford this exorbitant expenditure. Thus, with guidance from Ed Elements, I identified a new content provider for mathematics.

Third and most importantly, despite previous indications stating otherwise, KEA did not have sufficient Internet bandwidth to run its blended learning program. As a result, KEA decided to forego the use of computers for its two-week summer school program. When the bandwidth at the co-located district school site was tested during the summer, it appeared that it would be sufficient for the number of computers that KEA planned to use. However, once the school year began, it became evident that the Internet bandwidth could not feasibly accommodate all of the students, teachers, and administrators at the shared district facility and at KEA. Without sufficient Internet connectivity, the KEA blended learning model could not run effectively. After much debate, it was decided that the infrastructure implemented by LAUSD would not be adequate; KEA would need to sidestep the LAUSD network by installing cable Internet service from a third-party vendor.

School Design

Surprisingly, KEA's academic calendar helped to facilitate the rollout of its blended learning model. All KIPP students attend a two-week summer program that acts as a bridge from the previous school year to the next. This summer program helps to mitigate the summer slide, or dip in student performance, that often occurs when students are away from the classroom for two to three months during the summer. At the same time, this two-week summer program acclimates students to the culture, systems, and procedures of the school.

Since the computers could not be utilized for the summer school program, it gave my dean, Neela Parasnis, and me a chance to work with our students during the 30-minute blocks of time they would have otherwise spent on the computers. With summer school underway, Neela and I used this time to read children's books and put on skits and puppet shows for students to learn the values of the school. Ultimately, my staff and I made the most out of a less than perfect situation, especially since the two-week summer school program was followed by a week of professional development for teachers. Luckily, the extra three weeks provided KEA enough time to troubleshoot its Internet bandwidth challenges, install cable Internet service, and prepare for the official rollout on September 7, 2010. When the school year officially started, KEA was finally ready to fully implement its blended learning model.

Initially, when we had anticipated receiving Class-Size Reduction (CSR) funding, which was contingent upon class sizes being held to 20.4 students or fewer, I envisioned having five classes of 20 students for each grade. However, because KEA lost CSR funding, I was forced to alter the school's model and increase the role of technology. I was able to overcome the public funding shortfall by cutting costs and increasing revenue elsewhere. KEA eliminated one full classroom from its model, and, as a result, had one less teacher to hire and one less classroom for which to buy furniture, supplies, and other instructional materials. Now, down to just four classrooms, KEA also boosted revenue by increasing class sizes to 28 students. Even with the additional costs associated with purchasing more software licenses than expected and 15 laptops for each classroom, KEA still yields an estimated cost savings of over $120,000 (see Table 6-1) when comparing the costs of our original (traditional) model against our blended learning model.

Table 6-1 Comparison of Costs between Traditional and Blended Learning Models

Comparison of Costs between Traditional and Blended Learning Models			
	Traditional	**Blended Learning**	**Impact**
Teachers per grade level	5	4	
Payroll	14	13	+$72,000
Classrooms / Furniture	5	4	+$20,000
Students	100	116	+$147,000
Increased Misc. Costs			–$25,000
Computers	20	60	–$40,000
Software Licenses	$2,500	$25,000	–$22,500
Tech Consultants, PD		$30,000*	–$30,000
Estimated Savings per Grade Level			**+$121,500**
Estimated Savings per Student			**+$1,047**

*Estimated ongoing costs/year

Keeping laptop computers inside the classroom rather than utilizing a separate computer lab was also a non-negotiable for my vision of what KEA should look and feel like. By keeping the technology inside the classroom, the computers could be utilized throughout the day in various subjects, as needed. This decision will be most important when students reach the upper-elementary grades and can use the computers for writing assignments, email, and researching information online for science, social studies, or other subjects. Leaving the computers in

the classroom also cuts down on the transition time it would take to go to and from a lab. Moreover, since time in a computer lab does not count as instructional seat-time minutes in California, keeping the computers in the classroom with the homeroom teacher makes economic sense as well. Furthermore, it saves money by eliminating the need for an extra classroom, as well as paying for someone to monitor that room. Lastly, having the computers in the classroom rather than having an external lab ensures that the students working on the computers are integrated in the classroom setting with their teachers and classmates.

In the KEA kindergarten model, each of the four classrooms has a lead teacher. Additionally, there are two intervention teachers, split between two of the four classrooms, providing targeted instruction intended to help students catch up if they are struggling and prepare them for more advanced material. There are also two instructional assistants that are shared between two classrooms—they switch classrooms throughout the day with the intervention teachers. Intervention teachers "push into" the classrooms during math and reading. Meanwhile, instructional assistants "push in" during writing and nap time (in the afternoon). The instructional assistants work with small groups of students, assist with learning centers during writing, and perform clerical duties during nap time and at other times throughout the school day. This intervention teacher/instructional assistant rotation allows for two teachers to be in the room during the all-important reading and math blocks. It also allows the classrooms to have two adults in the room for most of the day. Certainly, juggling 28 students can be a great deal of work, but having two adults in the room, even with such a limited budget, is extremely helpful.

By having personnel push into the classrooms in this fashion, KEA is able to ensure a 14:1 student to teacher ratio or better. As Figure 6-1 illustrates, during math, the intervention and lead teacher can work with two small, fluid, and homogenous groups of students for 45 minutes a day. Students are grouped as such based on performance data. If teachers need to work with even smaller groups, they can have a few students either work in learning centers geared toward their needs or further their skills by utilizing DreamBox's online math curriculum.

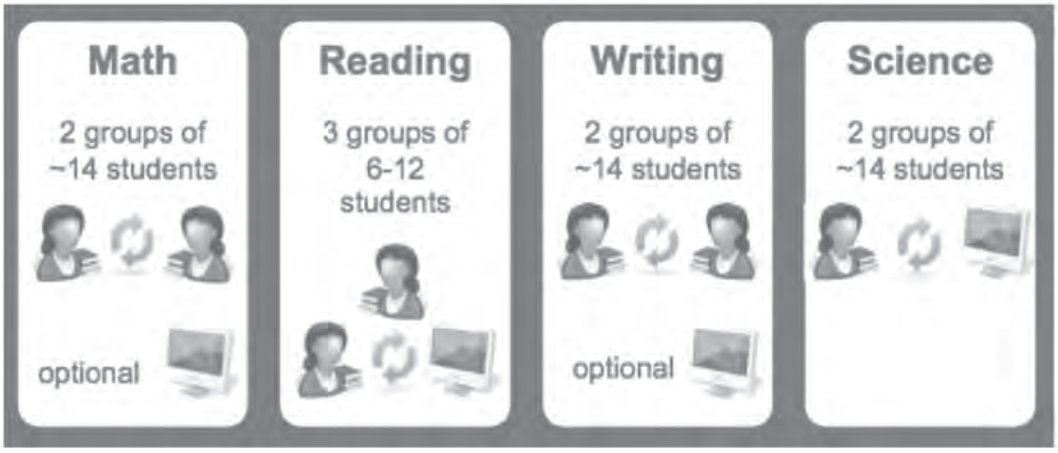

Figure 6-1 Student to Teacher Classroom Ratios

During writing, the lead teacher works for 30 minutes with one group of 14 students, while the instructional assistant tends to the other students as they progress through their Word Work centers, spelling exercises, or other writing-related lessons. After 30 minutes, the

students switch. Again, this allows the teacher to provide individualized instruction to a small group of just 14 students. With groups of this size, the teacher can more easily differentiate learning and provide instruction within a student's Zone of Proximal Development (ZPD), psychologist Lev Vygotsky's term for the teaching "sweet spot," where a student is taught material just beyond what they can do on their own. Instruction delivered to a student's ZPD facilitates learning new material much faster than if a teacher instructs using the traditional shoot-for-the-middle approach to teaching an entire class of students at once.

For reading, KEA divides the 28 students even further into three fluid reading groups. This is done so that teachers can more appropriately zero in on a student's ZPD during literacy instruction. Consider that, at the beginning of kindergarten, there are generally three types of emerging readers in a classroom: students who know all of the letters and corresponding sounds and are ready to start learning to read, students who know a few letters and sounds and need to learn more before they can start reading, and students who do not know any letters or sounds and need significant phonemic awareness instruction to be caught up with their peers. Instead of the traditional model where one lesson is taught toward the middle group, which would not be challenging enough for the higher-performing students and far too advanced for lower-performing students, each group can receive a lesson tailored to their unique learning needs. The group sizes are predetermined by how students perform on STEP literacy assessments, KEA's literacy interim assessments. My team and I consistently evaluate the data to see how many students should be in the high, middle, or low reading groups. During the year, by receiving instruction within their ZPD, students can accelerate at a faster pace because they are receiving instruction tailored to their needs. Because KEA constantly assesses its scholars—informal assessments are administered bi-weekly and the STEP literacy interim assessments are administered five times a year—students may switch groups as often as their learning needs fluctuate.

Classroom Instruction

Within this three-group reading model, at any given time, one group is with a teacher for a 30-minute phonics/fluency lesson, one group is with another teacher for a 30-minute guided reading block, and the last group is using the adaptive technology of the iReady computer program. Then the students rotate from one block to the next until everyone has completed all three blocks. As with the small group instructional model geared toward instructing students within their ZPD, iReady consistently adapts to the user. If a student struggles with his or her decoding skills, iReady will cycle back to reteach the lesson. Likewise, as is the case with our teaching model, if a student excels, he or she can accelerate ahead so that the challenging content matches his or her ZPD.

During science, which will always be a daily, full-year subject at KEA, the lead teacher is alone in the classroom in order to allow enough prep time to the instructional assistants and the intervention teachers. To make this work, half of the students are working on the computers while the other half are with the teacher for 25 minutes of hands-on, inquiry-based instruction. And then, once more, the students rotate. Again, through this rotational model, students continue to receive instruction in groups of 14 or smaller.

Table 6-2 below outlines KEA's full instructional schedule for kindergarten.

Table 6-2 KEA's Schedule for Kindergarten

KEA's Schedule for Kindergarten				
Class A	**Class B**	**Time**	**Class C**	**Class D**
Breakfast (instructional assistants)	Breakfast (instructional assistants)	7:15 – 7:30	Breakfast (instructional assistants)	Breakfast (instructional assistants)
Centers / Morning Routine (lead teacher)	Centers / Morning Routine (lead teacher)	7:30 – 8:00	Centers / Morning Routine (lead teacher)	Centers / Morning Routine (lead teacher)
Math Meeting & Community Circle (lead teacher or intervention teacher)	Math Meeting & Community Circle (lead teacher or intervention teacher)	8:00 – 8:25	Math Meeting & Community Circle (lead teacher or intervention teacher)	Math Meeting & Community Circle (lead teacher or intervention teacher)
Reading Block (lead teacher, intervention teacher, and computers)	Morning Message and Writing for Social Change (lead teacher and instructional assistant)	8:25 – 9:55	Reading Block (lead teacher, intervention teacher, and computers)	Morning Message and Writing for Social Change (lead teacher and instructional assistant)
Energizer/Transition	Energizer/Transition	9:55 – 10:05	Energizer/Transition	Energizer/Transition
Morning Message and Writing for Social Change (lead teacher and instructional assistant)	Reading Block (lead teacher, intervention teacher, and computers)	10:05 – 11:35	Morning Message and Writing for Social Change (lead teacher and instructional assistant)	Reading Block (lead teacher, intervention teacher, and computers)
Recess (Administration and instructional assistants)	Lunch (Administration and instructional assistants)	11:35 – 12:00	Recess (Administration and instructional assistants)	Lunch (Administration and instructional assistants)
Lunch (Administration and instructional assistants)	Recess (Administration and instructional assistants)	12:00 – 12:25	Lunch (Administration and instructional assistants)	Recess (Administration and instructional assistants)
Recharge / Nap (lead teacher and instructional assistants)	Math (lead teacher and intervention teacher)	12:25 – 1:10	Recharge / Nap (lead teacher and instructional assistants)	Math (lead teacher and intervention teacher)
Math (lead teacher and intervention teacher)	Recharge (lead teacher and instructional assistants)	1:10 – 1:55	Math (lead teacher and intervention teacher)	Recharge (lead teacher and instructional assistants)
Energizer / Snack	Energizer / Snack	1:55 – 2:05	Energizer / Snack	Energizer / Snack
Science & Technology (lead teacher + computers)	Spanish or Physical Education	2:05 – 2:55	Science & Technology (lead teacher + computers)	Spanish or Physical Education
Spanish or Physical Education	Science & Technology (lead teacher + computers)	2:55 – 3:45	Spanish or Physical Education	Science & Technology (lead teacher + computers)
Centers, Read Aloud or Enrichment	Centers, Read Aloud or Enrichment	3:45 – 4:10	Centers, Read Aloud or Enrichment	Centers, Read Aloud or Enrichment
Dismissal	Dismissal	4:15	Dismissal	Dismissal

In the first and second grades, students largely follow a similar schedule and rotational model. However, due to further spending cuts in California, KEA has eliminated the instructional assistant position for the first grade classrooms. As a result, during writing, when students would have been with the instructional assistants, they will instead be working on the computers. This means that first graders could have an extra block of time on the computers, in addition to the one math-based and one literacy-focused blocks.

To adjust to this, KEA added additional content options in the Launchpad application for the 2012–2013 school year. By clicking on the Typing Pal icon on their Launchpad home screen, students can further their computer literacy and typing skills. By boosting their typing and computer literacy skills, KEA hopes that second grade students will be typing their writing assignments and making PowerPoint presentations by the end of the school year.

KEA also used Typing Pal for its kindergarten students at the very beginning of the school year. Typing Pal walks kindergarteners through how to click, drag, select, and find letters on their keyboards. This instruction introduces kindergarten students to basic computer skills and sets them up for success on the computers for the remainder of the school year.

First and second graders have another option that they can choose during writing time as well. A team of teachers and I have selected a series of videos and interactive lessons and sequenced them around certain topics. For example, teachers found age-appropriate videos to help students obtain exposure to social and cultural current events that spark thinking and debate. Students watch these videos during part of their writing time and then have the opportunity to discuss the various topics with their peers. On certain days, particularly for homework during the weekends, students have extra time to reflect on the content featured in these videos by writing a personal response, constructing a letter they can send to an important stakeholder, or forming an opinion piece. While this aspect of KEA's blended learning model is still in its nascent stage, it promises to inspire students to become critical thinkers and leaders, along with using the power of the pen.

Looking Forward

The critical thinking video series presages what is to come for KEA's blended learning model in the upper elementary grades. Beyond its rotational model that cycles students through math and reading content, KEA seeks to further maximize computer use from second grade through fourth grade. Students will type their writing assignments, make PowerPoint presentations, and conduct research online. For the 2012-13 school year, KEA has introduced Achieve3000 to further encourage inquiry, discussion, and reading across multiple content areas. Achieve3000 is a web-based, individualized learning program that offers students a chance to read and respond to high-interest reading topics. Because the reading content is matched to a student's Lexile reading level, all students in a class—no matter their reading level—can access the same content and be equipped to discuss this content with others in the classroom. Additionally, teachers can track student reading progress with Achieve3000's data tools.

For math in second grade and beyond, KEA students will use the ST Math software program. Our research confirms the positive reviews we have heard about ST Math from other blended learning schools. We like the way the program's visual presentation of material assists students in developing a deeper understanding of mathematical content.

KEA's addition of Achieve3000 and ST Math will continue to accelerate the achievement of our students and will help us achieve our long-term goals (see Table 6-3).

Table 6-3 KEA Long-Term Goals

KIPP Empower Academy Long-Term Goals	
STUDENT ACADEMIC PERFORMANCE	Achieve and maintain an Academic Performance Index (API) of 900 or greater out of a possible 1,000 on the California Standards Test (CST)
COLLEGE READINESS PREDICTOR	Have 50% of students score in the advanced category on the ELA and Math portions of the CST
PARENT SATISFACTION	Score among the top 25% of all KIPP schools in overall parent satisfaction
TEACHER SATISFACTION	Maintain a teacher retention rate of 80% or higher each year and score among the top 25% of all KIPP schools in overall teacher satisfaction
MISSION ALIGNMENT	Make sure we are serving the population of students we set out to serve by ensuring that at least 85% of students qualify for free or reduced-price meals
SPECIAL EDUCATION	Remain within 5% of the local school district's percentage of students with special needs
FINANCIAL STABILITY	Ensure long-term stability by remaining fiscally solvent from year to year despite further cuts to California's budget

Blended Learning Management System

The Ed Elements Launchpad design also sets KEA students up for success. Through the easy-to-use, age-appropriate single sign-on process, students simply click on a picture of their teacher, themselves, and a picture password (see Figure 6-2). Then students are directed to the Launchpad home screen where they can choose from the aforementioned programs: IReady, ST Math, Typing Pal, DreamBox, Achieve3000, Accelerated Reader, our proprietary video sequence, and quizzes (to be discussed later).

Figure 6-2 Launchpad Sign-On Process

KEA has also added another icon for the Launchpad home screen. When students have completed a reading or math unit, they can now take their unit quizzes and tests online. This feature allows students to gain experience with online test taking and eliminates the need for teachers to grade tests or quizzes. Since each test item is matched to a state standard, once teachers log into the Ed Elements back-end teacher dashboard, they can look at real-time data of how their students performed. They can also dig deeper through the disaggregated data by searching for overall trends and performance by standard and by test item, as well as academic improvement over time. Additionally, the back-end teacher dashboard captures student performance data from each of the online content providers. Thus, teachers can research how their students are progressing both through in-class, teacher-based instruction and through their online learning.

Moving to a blended learning model altered staff professional development needs. Neela and I focused a great deal of time on ensuring that the teachers had clearly planned lessons in which all routines and procedures were well thought out. Teachers needed to train students how to transition quietly between teachers and on and off computers. This added further classroom management responsibilities to the teacher; however, just as with any other transition, once the students understood the teacher's expectations and practiced how to move on and off the computers, these transitions became a seamless part of the school day. Moreover, KEA teachers were trained on how to use the wide array of student data from the online content providers and from in-class assessments to inform their teaching practice. In most areas, the online data, which was reviewed on a bi-weekly basis, confirmed what the teachers had already experienced with the students in the classroom. However, at times, the online content data provided additional information that teachers had not previously experienced with their students. Teachers mainly focused on the areas of weakness the online programs had identified for remediation so that they could alter their lesson plans to concentrate on these areas. In sum, teachers felt as if they had a wider picture of each student's overall profile and, as a result, could improve instruction for their students.

One of the most difficult aspects of starting a blended learning program for primary-aged students is that there is a dearth of choices of online content. Because most online content providers have targeted secondary-aged students, KEA was forced to use whatever it could find that would have enough content to sustain roughly 30-minute online sessions in reading and math each day. As a result, KEA could not find an online content provider that would allow teachers the ability to alter the scope and sequence of skills the students experienced each day. Therefore, the computer-based instruction did not always tie directly into what the students were learning with their teachers. Thus, students were largely on a parallel track on the computers. While this was lamentable, KEA did feel that the adaptive learning programs that were chosen still provided students with instruction at their level, boosted their skills, and provided sufficient data that could still inform teacher-directed instruction.

Year 1 Results

Despite the early challenges KEA faced in launching its blended learning model, by all measures the first year can be viewed as a great success.

Overall, KEA teachers were extremely happy to work within a blended learning environment. All KEA teachers returned for their second year, and according to KIPP's national Healthy Schools Survey, KEA's teacher satisfaction scores ranked second among over 100 schools surveyed across the country. On a five-point scale, KEA's overall teacher satisfaction rate was 4.63, compared to the KIPP network average of 3.93. When asked specifically about implementing the blended learning model, teachers noted that the strategic use of staff and computers allowed them—many for the first time in their teaching careers—to truly get to know their students. The small group instructional model made possible by having 15 computers in every classroom made teaching more manageable. Teachers loved being able to work with homogeneously grouped students and observed the outstanding student achievement growth as a direct consequence of being able to individualize instruction for students.

Even though many KEA parents expressed some reservations at the start of the school year about the larger class sizes, by the end of the year, the parents of KEA students were totally sold on the blended learning program. Not surprisingly, many parents were concerned that their children would be in classes of 28 students. However, because they were familiar with the budget woes in California and knew that districts across the Golden State were being forced to increase class sizes to make ends meet, they understood that boosting class sizes was necessary. Yet, their fears were allayed when I showed them how their children will always be taught in groups of 14 students or fewer in the core subject areas. After seeing how intimately their child's teacher got to know their child and how much their children had achieved in just one school year, KEA parents ended the year extremely satisfied. In fact, on the Healthy Schools Survey, overall parent satisfaction was 4.71 at KEA, compared to the national KIPP average of 4.36.

Table 6-4 KEA Test Results

2011 Reading NWEA MAP Results	
Top Quartile	68%
3rd Quartile	28%
2nd Quartile	2%
Bottom Quartile	2%

2011 Math NWEA MAP Results	
Top Quartile	58%
3rd Quartile	38%
2nd Quartile	3%
Bottom Quartile	1%

KEA's student achievement results after one year of instruction were strong. On the nationally normed SAT-10 test, 98% of KEA students outperformed the national average in reading and math. Moreover, 96% and 92% scored in the top quartile of the reading and math sections, respectively. As Table 6-4 shows, on the nationally norm-referenced MAP test, developed by the Northwest Evaluation Association (NWEA), 96% scored at or above the national average, with the majority of students scoring in the top quartile.

It is even more noteworthy to consider that this level of achievement resulted from a modest amount of instructional time being devoted to these subject areas. KEA scholars spent just one hour a day in teacher-led reading instruction and 30 minutes a day on reading-related computer lessons. For math, students spent just 45 minutes with a teacher and 25 minutes on their laptops. Altogether, this shows that a blended learning model can help students go farther faster, without having to spend a tremendous amount of time during the school day on reading and math. A blended learning model, if implemented to precision—with smooth transitions and teachers who adhere strictly to the schedule—can foster a learning environment that cultivates the whole child. A more efficient school day frees up time for writing, science, social studies, music, art, dance, physical education, and recess—subjects that often get cut due to standardized test-induced increases in literacy and math instruction.

KEA does not view blended learning as a panacea because there is so much more that makes a great school than simply the use of technological innovation. It is feared that school districts will blindly implement blended learning models in the hope that they will achieve significant gains in student achievement. Therefore, while KEA is hopeful for what a blended learning model can do to facilitate fiscal solvency and enhanced student achievement, it does so knowing that several factors contribute to a school's greatness—and none are more important than the quality of instruction.

Implications

Without a doubt, it takes more than just computers to make a blended learning model work. In the KEA example, our talented teachers and staff were hired not only for their commitment, leadership, and management capacity, but also for their ability to be flexible and adept at following a meticulously structured schedule that requires a great deal of movement. The teachers and staff received professional development training to follow the rotational schedule to precision. They also need to manage a classroom well in order to facilitate regular, smooth transitions. Furthermore, the teachers must be trained how to interpret and use student achievement data, especially that which the various computer programs generate.

Schools that adopt a blended learning model need to strongly consider assigning a project manager who will be the point person for vendor management, troubleshooting computer issues, and keeping abreast of any teacher concerns. Ultimately, someone must take ownership over the implementation of the model so that if issues arise, such as facilities constraints or bandwidth challenges, someone is responsible for ensuring a speedy resolution.

Allowing for significant implementation lead-time and setting realistic expectations in a school's first year of implementation are also important. With potential facility-related issues, bandwidth concerns, or hardware challenges, having lead-time allows a school enough of a buffer to remedy these challenges in order to mitigate their effects on student learning when school starts. Additionally, if issues arise, being able to assign or hire someone who can address IT challenges on-site is also valuable. KEA was fortunate to have room in its budget to hire an instructional assistant for technology who could prevent many of the aforementioned challenges from overwhelming school administration.

Hopefully, these recommendations, summed up in Figure 6-3 will benefit those schools or school districts interested in moving toward a blended learning approach.

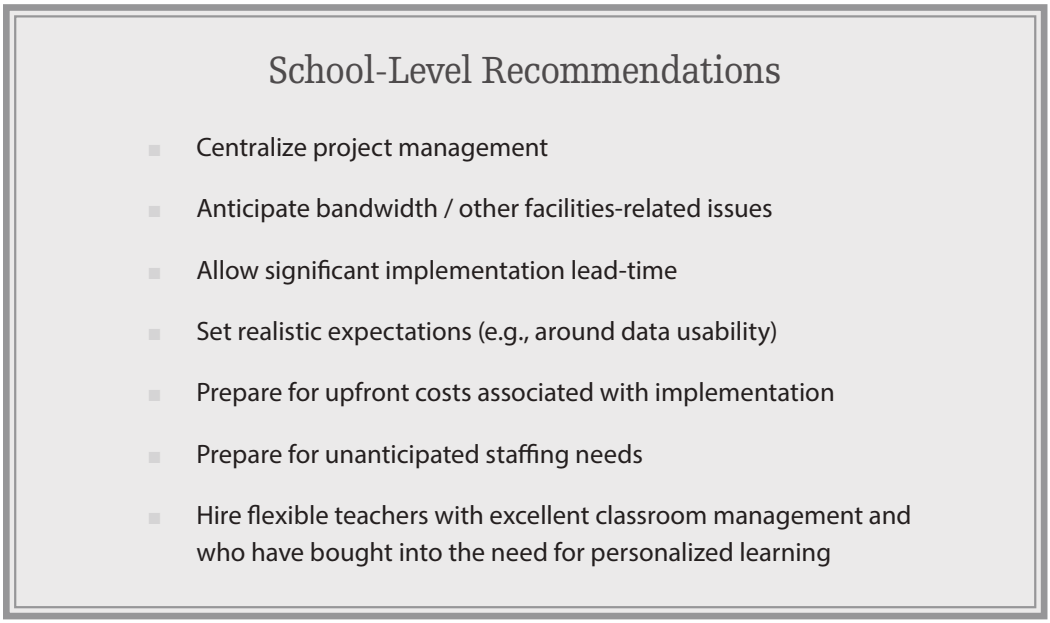

Figure 6-3 KEA School-Level Recommendations

Despite having a great deal of success in its first year, the administration and teachers of KEA are continuously learning and making adjustments where and when needed. Because there are so few blended learning programs for primary-aged students, KEA is constantly evaluating our instructional program and making improvements as we continue to evolve over time. If more primary schools decide to adopt blended learning, my team and I would be thrilled to have their administration and teachers visit our campus and act as thought partners with whom we can share ideas. Until then, KEA will continue to assess: 1) what the appropriate amount of computer time is for primary-aged students; 2) how to best utilize and support teachers in the blended learning environment; 3) whether it is better to integrate the online learning with class instruction or to maintain a parallel track where the online adaptive learning is separate from in-class instruction; and 4) how best to maximize the role of the computer as students move into the upper elementary grades.

KEA's assessments of our program have led us to make a few curricular changes for the 2012–2013 school year. KEA replaced the iStation literacy program serving K–1 students with iReady. We have found iReady to be a better fit for us because it is entirely web-

based, more affordable and, unlike iStation, it provides students with constant feedback regarding their academic progress. Additionally, KEA replaced *Learning.com* with Typing Pal because it offers students a great deal more support in augmenting their typing skills than *Learning.com*. Additionally, KEA removed Compass Learning due to cost, effectiveness, and the demands this program places on our available Internet bandwidth.

While there are still so many questions yet to be answered, it is safe to say that KEA would not have achieved the success that it has thus far experienced if it were not for its blended learning model. "Going blended learning" has allowed KEA to mitigate significant public funding cuts to its expected per-pupil revenue and, with thoughtfulness and economic acumen, other schools and school districts can save money this way, too. However, it cannot be emphasized enough that not only did the adoption of a blended learning model save money, but more importantly, it helped preserve the personalized learning approach that has been so critical to KEA's outstanding student achievement results. In every decision, what is best for student learning was never compromised. As a result, KEA students have and will always receive personalized instruction one-on-one, through adaptive technology or within small groups. Not only will the KEA scholars augment their 21st century skills and be exposed to an innovative approach to learning that maximizes their potential, they will also influence the course of other blended learning schools to come through their achievement and indefatigable love for learning.

About the Author

Mike Kerr is the founding principal of KIPP Empower Academy (KEA). Prior to founding KEA, he was the founding principal of the Achievement First Crown Heights Elementary School in Brooklyn, New York. Mr. Kerr is now in his ninth year as a principal. He completed his undergraduate work at the University of Maryland and holds graduate degrees from Bank Street College of Education and Harvard University. He is also a 1999 NYC Teach for America corps member.

CHAPTER

7

Blended Learning for Alliance School Transformation: BLAST

Dr. Michelle Tubbs, ATAMS Principal

Ms. Ramisi Dilley, BLAST Learning Coordinator

Mr. Brian Redmond, BLAST English Teacher

Alliance for College-Ready Public Schools

The Alliance for College-Ready Public Schools is the largest Charter Management Organization (CMO) in the Los Angeles area. It currently consists of 21 middle and high schools. Alliance College-Ready Public Schools has consistently outperformed and graduated a significantly higher percentage of its students than the surrounding public schools in the greater Los Angeles area. Of these 21 schools, two piloted and converted to a partially blended modality and one, Alliance Technology and Math Science High School (ATAMS), opened with full blended implementation on August 15, 2011, in the Glassell Park/Cypress community in the northeastern sector of Los Angeles. Based on the early success of these three schools, an additional Alliance high school opened in the full blended learning model in August 2012 and three existing Alliance middle schools began the conversion to blended learning in their 6th grade classes. The mission of Alliance is specific to the Los Angeles area and to its larger community.

The mission of Alliance College-Ready Public Schools, a nonprofit charter management organization, is to open and operate a network of small high-performing 9–12 and 6–8 public schools in historically underachieving, low-income communities in California that will annually demonstrate student academic achievement growth and graduate students ready for success in college. We aim to prove that it is possible to achieve success at scale, using existing state resources and easily replicable instructional models.

Alliance Core Values

1. High expectations for all students
2. Small personalized schools and classrooms
3. Increased instructional time
4. Highly effective principals and teachers
5. Parents as partners

The Blended Learning for Alliance School Transformation (BLAST) model is based on a three-station rotational system that provides students with small group interaction with the teacher (direct instruction station), one-on-one online learning to master standards in an individualized manner (independent station), and small group activities to enhance critical thinking and team-building skills (collaborative station). This three-station system allows students to access the same California state standard in three different ways.

What is BLAST/Blended Learning?

Blended learning in the Alliance network came to fruition through the collaboration of three Alliance leaders: CEO Dr. Judy Ivie Burton, VP of Schools Mr. Robert Pambello, and ATAMS Principal Dr. Michelle Tubbs, who pioneered the idea of student rotations in her own math classes as Director of Math Intervention between 2008 and 2009. Dr. Tubbs collaborated with Pambello and Burton to use this rotational model in all core classes. After a pilot group of 9th graders utilized the model successfully in the following year, Alliance moved forward with the idea. During the 2011–2012 school year, ATAMS opened as the first fully implemented BLAST school, with one laptop provided for every student.

Blended learning is framed around mastery learning as the instructional model, dependent upon technology, and requires each student to have a laptop computer. Students "check out" their laptops each morning and return them prior to dismissal at the end of the school day. Giving students the responsibility to use the same laptop every day teaches proper care and maintenance of the laptop and personalizes their learning. This is the core of the BLAST model: personalized attention and commitment to teach all students, rather than teaching only half of the student body. Personalization is accomplished through every aspect of the model, from desk placement to classroom wall displays. Figure 7-1 depicts how each ATAMS classroom is divided: three rotations that are all committed to student success in different modalities.

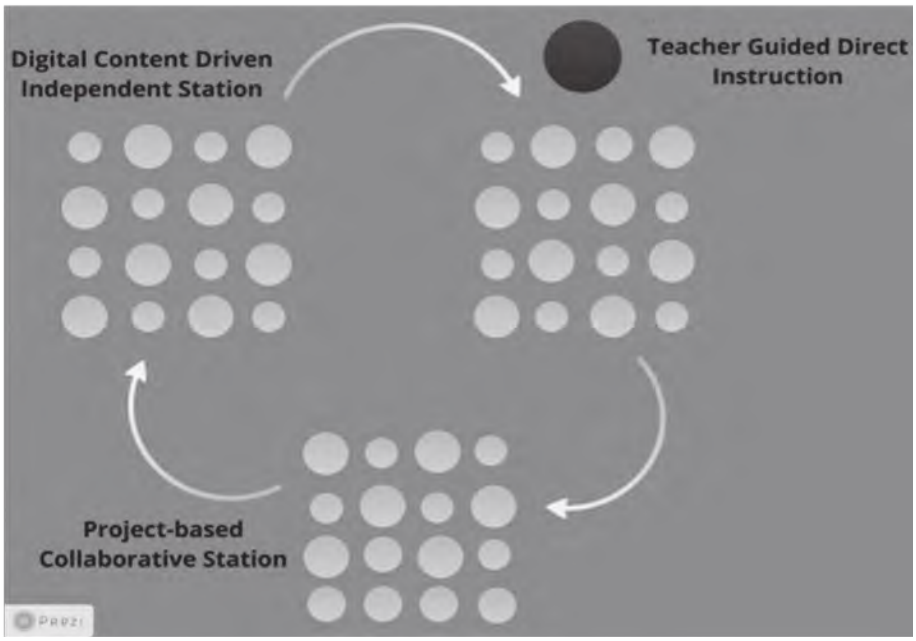

Figure 7-1 ATAMS classrooms division

The blended learning model is a response to a growing number of needs, both inside the classroom and in the education system as a whole. Online instructional content offers more options than a traditional textbook for diverse groups of learners, including the large percentage of English language learners in the Los Angeles area. Computer-based assessments free up instructor time, which can then be used to increase differentiation and rigor in lesson planning. Yet the human element in the classroom is essential; both students and teachers consistently request greater one-on-one time and attention. The BLAST model is a "marriage" between an ideal instructor-led classroom with a small student to teacher ratio and incorporation of the infinite Internet resources into the classrooms every day. Alliance strives to prepare students for college. The BLAST model does just that.

BLAST Signature Practices

Over the course of the first year, ATAMS developed five signature practices, which enable the model to accomplish its mission to personalize instruction and maximize teacher-student interaction.

1. **Digital Agendas**
   The Digital Agenda is the BLAST version of a lesson plan. Unlike a traditional lesson plan, which is created by the teacher and sent to administration for approval, the digital agenda is posted online, after approval, for the students to access. Upon entering the classroom, students immediately download their weekly agenda and begin to work on their assignments. The agenda lessons are rigorous enough to challenge students who are ahead of the class, and teachers often have an agenda for the following week, allowing students to work at their own pace during the independent station. Conversely, students who are struggling with a particular

standard can master it during the independent station so that they are ready to rotate back to direct instruction. Clear and concise directions on the digital agenda enable teachers to focus on their 16 students in the direct instruction stations, which minimizes directing students in the other stations back on task.

Table 7-1 Sample Digital Agenda

Sample Digital Agenda
Essential Question(s): 1. How can the students use Pascal's Triangle to expand simple binomials? 2. How can the students use the Binomial Theorem to expand binomial expressions?
Standard(s) from Instructional Guide: (TCRP Domains 1-3) Alg II 20.0: The students know the Binomial Theorem and use it to expand Binomial expressions that are raised to positive integer powers.
Student Objective(s): 1. The students will be able to use Pascal's Triangle and use to expand simple binomials. 2. The students will be able to use the Binomial Theorem to expand binomial expressions. **College Objective:** Objective: The students will be able to use the Binomial Theorem in any other higher-level Mathematics Class in College. Applications: Recognize and use applications of the Binomial Theorem in real world application problems.
Assessment and Student Reflection: Exit Slip on each station based upon what was done at that particular station and will deal with the respective CST Released questions.

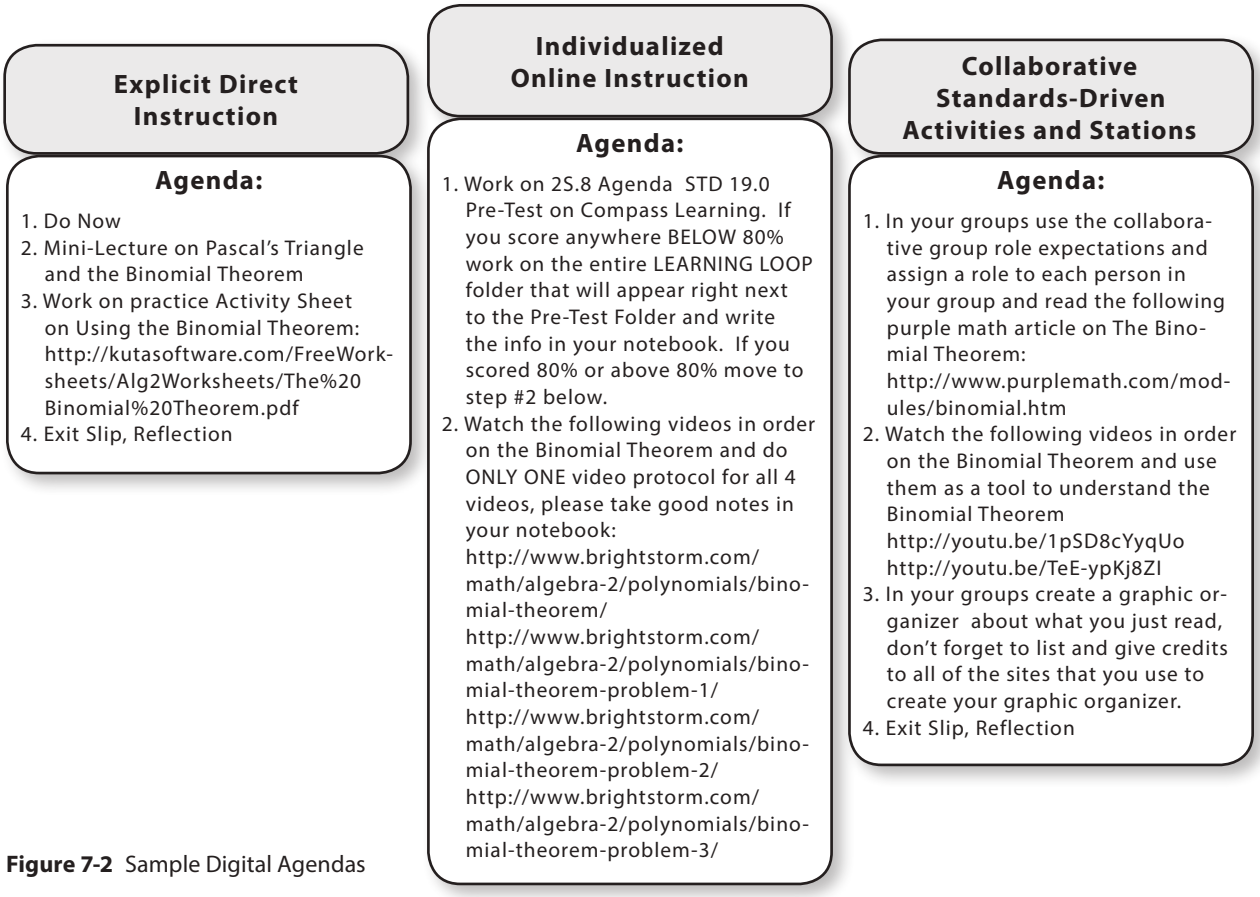

Figure 7-2 Sample Digital Agendas

2. **Station Rotations**
   The BLAST model operates through three stations with students rotating every 35–40 minutes. Desks are numbered, enabling a student sitting in desk number two in one station, to be seated at desk number two in every station, which include direct instruction stations, collaborative stations, and independent stations. Direct instruction mirrors the ideal traditional classroom setting, long lost with growing school enrollment. Teachers work with no more than 16 students at a time on California standards-based lessons. Simultaneously, four groups of four students are practicing the same standard on a small group project. This project might be a Biology lab write-up or a World War II timeline. Collaborative stations encourage students to work together and help one another. Station leaders, assigned by the teacher, help their own group as well as the other groups stay on task. Station leaders, or "Lead Tutors" as Math Instructors Wendy and Gina Chaves call them, are another way to maximize the 40 minutes teachers have with each group. Independent stations are where students work on the standards via digital content providers such as Compass Learning, Achieve3000, and Revolution Prep. Students may utilize headphones to watch instructional videos and take Cornell notes in their notebooks. Notebooks are graded weekly and students receive immediate feedback on their online tests and quizzes. Students must receive a proficient score of 80 percent. If this is not possible, the students will complete the assignment until they reach this goal.

3. **Collaborative Station Group Protocol**
   While in direct instruction, teachers are aware of each group's understanding of the material based on participation. Independent station produces data for teachers to access in real time; that is, a teacher can pull up student data from the independent station in as little as the 30 seconds it takes students to rotate to the next station. Essentially, instructors have the ability to know where students are on the spectrum of understanding before they even reach their stations. The collaborative station, on the other hand, does not offer this type of data, and the need arose to structure the collaborative station to better inform teachers of student progress during this time. Through trial and error, ATAMS teachers developed the collaborative group protocol. Students in the collaborative groupings are assigned roles for project completion. Roles are clearly outlined, and group members grade both themselves and their classmates on how well they completed their role. Group members switch roles on a daily or weekly basis, depending on the activity. Collaborative group protocol forms are collected along with the completed project or assignment for a holistic grade.

Table 7-2 The Collaborative Group Role Expectations Protocol

The Collaborative Group Role Expectations Protocol	
ROLE	**DESCRIPTION**
Discussion Director	Lead the group in discussion of questions assigned by the teacher or provided by the author or develop your own questions over confusing concepts and processes.
Bridge Builder	Help the group make connections to math concepts studied in other units, which have been learned earlier in this class or in previous classes. What bridges or applications can you make between this information and the "real world"?
Example Finder and Creator	Find at least three good examples that help clarify information in this section. Create three of your own examples for each concept.
Vocabulary Expert	Find and share complicated or important terms and vocabulary concepts. Choose at least five words from the reading and have everyone start building their own vocabulary PowerPoint or Prezi ongoing presentation, include the definitions and how the words might be used in text, or what the meaning would tell you to do in the process. When it is your turn to lead the discussion, have everyone find the word in the reading and then talk about what the word might mean. After your discussion, write down what you think the word means from context, and then add additional examples or information about the word from the Internet.
Process Server	Pay attention to processes and procedures in the section. Be prepared to share an application of the process or procedure that you have created.
Illustrator/Graphic Organizer Creator	Provide a graphic organizer/think map or artistic representation of the key ideas and processes in the text. Show your illustration to the others in your group. Ask them to interpret your diagrams and tell how they relate to the major concepts and processes in the text, and have them write the explanation out in full sentences in at least one six-sentence paragraph.

4. **Data Wall**

   Every ATAMS classroom reflects both course content and the teacher's tastes and personality. However, there are some unmistakable similarities whether the subject is Physics or English. Each classroom tells the story of student progress. ATAMS students are assessed in several ways, including NWEA (Northwest Evaluation Association) pre- and post-tests, quarterly Alliance-wide benchmark exams, and the California High School Exit Exam (CAHSEE) beginning in 10th grade. Students are also assessed through traditional classroom assignments and online tests and quizzes created by the teacher or digital content providers. Teachers at ATAMS dedicate a space in their classrooms for a Data Wall, also known as the students' "Road to Mastery." This wall reflects up-to-date data on student progress. Students use the terms "Proficient" and "Advanced Proficient" to describe their position on the Road to Mastery wall. Teachers update their walls with new data in easy to understand pie charts, and both students and teachers take pride in seeing more and more space for Proficient (colored green). By the end of the year, every ATAMS classroom reflects both class-wide and individual student growth, from the beginning of the year to the end.

5. **Hybrid Learning Management System (HLMS) Dashboard**
   The Dashboard is a digital platform that offers ATAMS all of the digital content through one integrated, user-friendly platform. Essentially, HLMS enables students and teachers to access the entire range of digital content provided by ATAMS with a single username and password. The Dashboard is a signature practice for ATAMS because it is a necessary time-saving tool. The BLAST model opens up the door of possibilities for student learning by utilizing all of the best resources on the Internet. The Dashboard makes it easy and fast to navigate through this virtual torrent of information, maximizing student learning during each 40-minute rotation. Teachers use the Dashboard to assign work and assessments to students in the digital station and to gather results from completed work. The Dashboard also offers filters, which enable teachers to determine students' holistic scores versus their scores on particular standards. Students also have access to their own data and take control of their own progress, without having to wait for an assignment to be graded or a report card to arrive in the mail.

Professional Development

Weekly professional development meetings are the foundation for success at ATAMS. Students are dismissed two hours early on Wednesdays, and teachers spend the time in a professional workshop designed with the sharing of best practices as its central focus. In a traditional school, professional development meetings are structured like a typical classroom, with school administrators assuming the role of teachers and the teachers themselves taking instruction. At ATAMS, however, administrators take on a facilitator role and teachers take turns sharing their struggles and triumphs throughout the previous week. Best practices are developed and modified to fit different content areas or different grade levels. Graphic organizers that made a hit in the English department are emailed to the group and customized for the math classes. This culture of sharing and continued growth is what ATAMS refers to as "Action Research," where learning and change happen in real time, as necessary (Figure 7-3). ATAMS administration takes a hands-on approach to professional development, reaching out to schools that are interested in transitioning to the BLAST model and offering both in-person and virtual professional development with seasoned BLAST teachers.

What is Action Research?

- A problem-solving practice
- A relective process
- Involves actively participating in problem solving while simultaneously conducting research for change

Why?

- Promote Reflective Practice
- Improve professional development
- Enrich curriculum development
- Encourage democratic leadership

Result:

- The best solution . . .

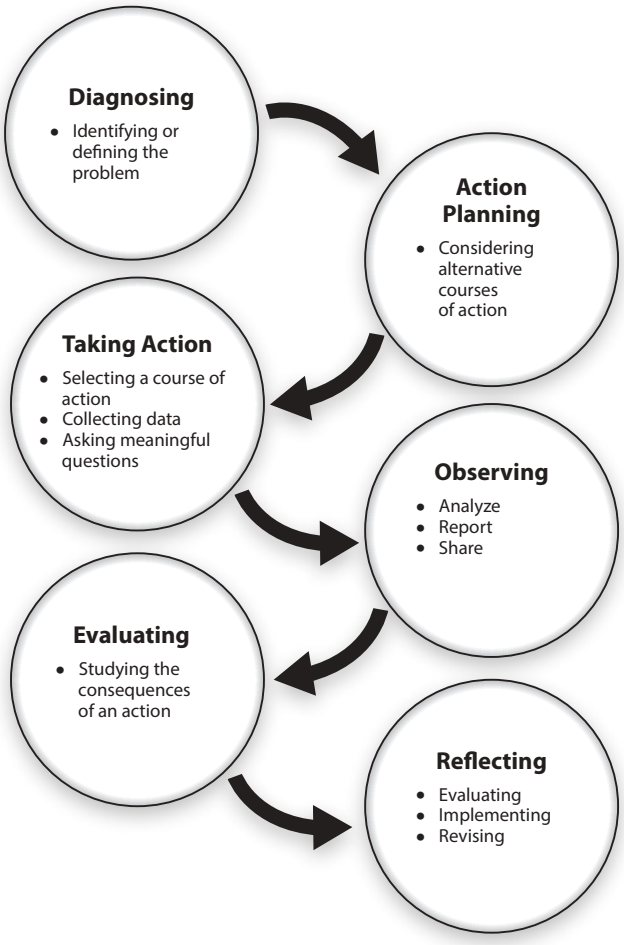

Figure 7-3 Action research stages

Students Take Charge of Their Own Learning

In a two-hour block of class, students experience three different learning stations focused on one specific set of standards. The purpose of this is to achieve mastery and completion of the specific standard. In each station, students are able to self-regulate, look for peer feedback, and ask for teacher support on the standard. Students are given ample time to complete each agenda activity but are also pressed to learn time management skills. Each digital agenda is completed by the end of the week, scaffolding the student for the next standard and lesson. Students are also given a flexible amount of space to work in. Not only is there movement from station to station, but if students feel that they have mastered a standard or need to repeat it, they may visit the station twice or push ahead to the next rotational group. In this way, students are mastering both the standards they need for district and state assessments and the skills that will propel them through college. The digital agenda can be thought of as a dual-lesson plan and a mini-syllabus that fosters students' responsibility for their pacing, progress, and achievement.

Students take control of their learning in a number of other ways. Through the HLMS Dashboard, students have access to their Pinnacle grade book at any time. ATAMS made

Monday grade checks a weekly signature practice during Advisory time "(the Alliance Home Room class period). This practice requires teacher commitment to four weekly grades, two each of Academic and Life Skills. Academic grades affect students' GPAs and include all tests, quizzes, and assessments. Life skills grades are earned through working well in groups, participation, good behavior, and work completion. Teachers update grades by Sunday evening and on Monday morning, students can see their progress on Pinnacle, without having to wait for a progress report or for after-school tutoring. ATAMS students have instant access once a teacher posts a new assignment grade. Students love to turn in work and watch their GPAs increase in real time.

The BLAST model technology supports very personal relationships between students and teachers. Educational social media sites such as Edmodo and digital content providers like Achieve3000 increase student communication with teachers through email and chat capabilities. Intermixed with the technology is the ever-present human element in the direct instruction station, where the student to teacher ratio is an ideal 16:1. This means all teachers know their students' strengths and weaknesses. There is never an opportunity for a shy student to be lost in the crowd or an off-task student upsetting the balance of an entire classroom. If executed effectively through rigorous lesson planning and engaging collaborative activities, student behavior issues are minimized in the BLAST model.

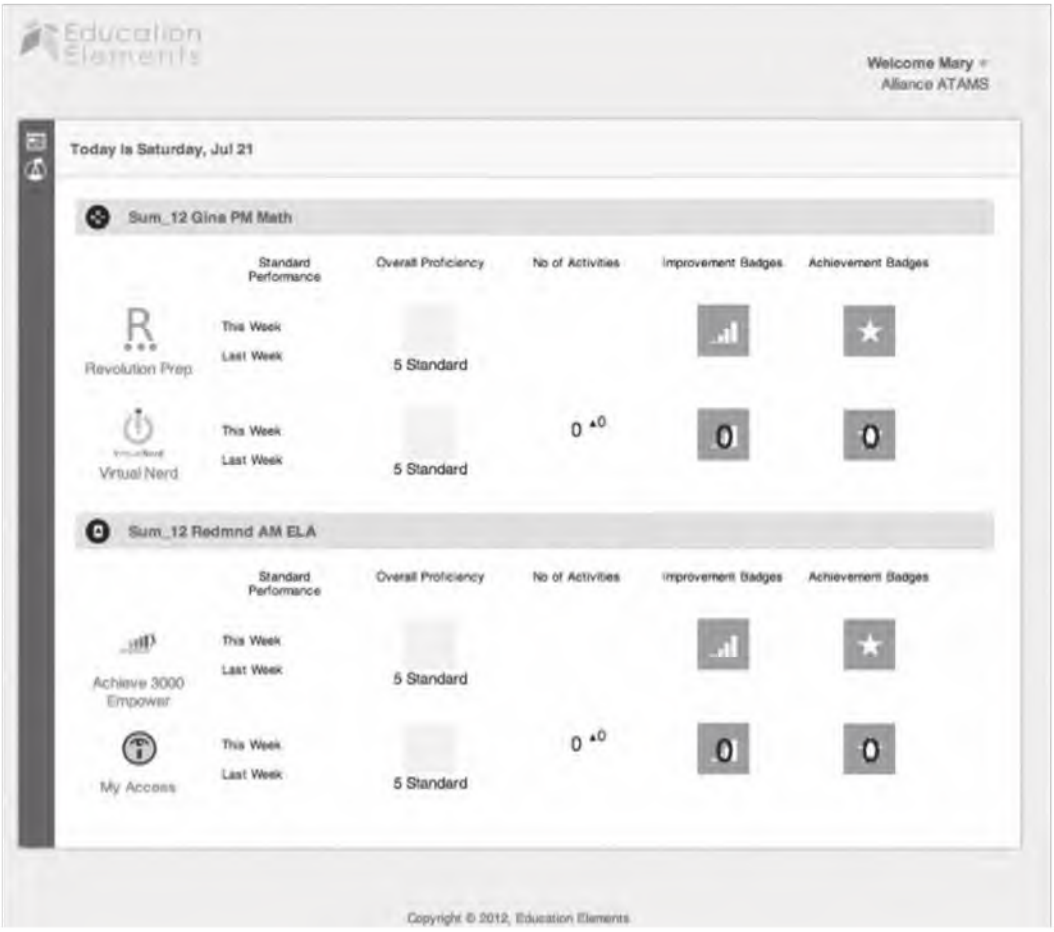

Figure 7-4 Progress report

Teacher's Role

The teacher's role in the BLAST Model is threefold. Throughout each rotational cycle, the teacher is involved in adjusting student engagement, real-time adaption to the lesson, and accountability measures. In the direct instruction station, teachers can adjust the lesson for student engagement through questions for understanding, exit slips based on the student achievement level, and station leaders that aid other students' understanding. This is highly effective in the small rotational groups, specifically in the direct instruction station. In the collaborative and independent station, the teacher is able to monitor student success in real time, based on the digital content feedback and exit slips delivered at each rotation. While the teacher is accountable for planning and delivering the lesson, specific models are set in place for student accountability in each rotational cycle. In the collaborative station, students are issued team roles to hold the group together and complete the lesson task at hand. In the direct instruction and independent stations, students are accountable for completing their exit slips with 80% accuracy and comprehension of the lesson before moving on to the next station. While the teacher is an instructor and monitor during the BLAST model, the central focus is on individualized and data-driven instruction. Teachers in the BLAST model personalize instruction by reviewing data through content providers while adjusting lessons, feedback, and concerns to intervene on struggling students. Teachers plan their weekly lessons on the digital agenda template. Teachers then upload the agendas, supplemental materials, and guided directions to an integrated platform. The digital agendas are color-coded to match the colored desk numbers. If a student is ever confused as to what to do, they simply look at their desk number and look for the assignment in the corresponding color. When students are struggling to grasp the concept in class, the teacher may have the rotational group slow down and have the students go at their own pace, or repeat a station if there are any concerns.

BLAST teachers must be committed to planning lessons that merge the traditional with the revolutionary. ATAMS teachers have embraced the available technology and prefer the real-time data they receive from the content providers. Students know they can email their teacher regarding the classwork. ATAMS teachers feel that the technology fosters human relationships rather than diminishes this element. "Many students feel supported through the use of emailing their concerns, being able to check their grades, and making meetings with their teachers—all through the use of their laptop. It really is essential to the school culture," says Mr. Redmond, chair of the English department. ATAMS teachers are committed to communicating with a minimum of ten parents per week in an effort to keep parents and guardians apprised of their students' challenges and triumphs.

BLAST Learning Coordinator

The BLAST Learning Coordinator may be a position unique to ATAMS, but this role is necessary for proper implementation of a fully blended learning model. Lessons learned in the first year of operation will be discussed in detail later in this chapter, but one lesson learned within the first two weeks was the need for additional support in the BLAST classroom. The BLAST Learning Coordinator wears many hats; responsibilities include training teachers on digital content providers, giving real-time support to students

in the independent station, acting as a liaison between teachers and administrators, researching and compiling best practices in the BLAST classroom, and reporting these findings during professional development meetings and to fellow BLAST schools.

In a nutshell, the BLAST Learning Coordinator deals with the minor complications that arise where technology is used to the extent that it is in blended learning classrooms. Teachers are trained on the digital content providers, but if a student is having an issue, this would take the teacher out of direct instruction. The model allows for redirection from the teacher when necessary. However, if a teacher leaves direct instruction for a lengthy period of time, such as more than five minutes, the model falls apart. The direct instruction students do not get their small class experience. Yet, if the teacher does not attend to the students in the independent station, they will not be productive during that rotation, which depends upon the technology. This is where the support of the Learning Coordinator comes into play. The BLAST Learning Coordinator is expected to become an expert on the model, with the ability to train teachers on digital content providers and provide real-time support when issues arise. When teachers need administrative support, the BLAST Learning Coordinator can step in temporarily if an administrator is unavailable. This person will often push into a classroom that is struggling to follow protocol and work with the students, once again maximizing the teacher's time in direct instruction. Because the BLAST Learning Coordinators are not teacher's aides, they might move into two or three classrooms during one block period, ironing out issues quickly and without disrupting the flow of the rotational model.

The BLAST Learning Coordinator receives more extensive training on digital content providers than teachers and will often present additional material to teachers during professional development. The BLAST Learning Coordinator observes effective BLAST classrooms and analyzes data across all content areas. In classes where the data shows steady and significant student improvement on California state standards, the BLAST Learning Coordinator will compile strategies implemented by the teacher to share as best practices with other teachers.

Administration's Role

Planning, implementing, and managing change within blended learning is a major focus of a BLAST administrator. ATAMS is a dynamic environment and requires dynamic processes, people, systems, and culture. With this in mind, we established a specific ATAMS Support System that embodies a) a focus on detail for establishing and measuring delivery of immediate actions; b) communication methods that enable immediate review and decision making; c) the empowerment of teachers and students to make decisions at a local operating level; and d) the adjustment of recruitment and training to ensure that stakeholders contribute positively to the culture of empowered dynamism.

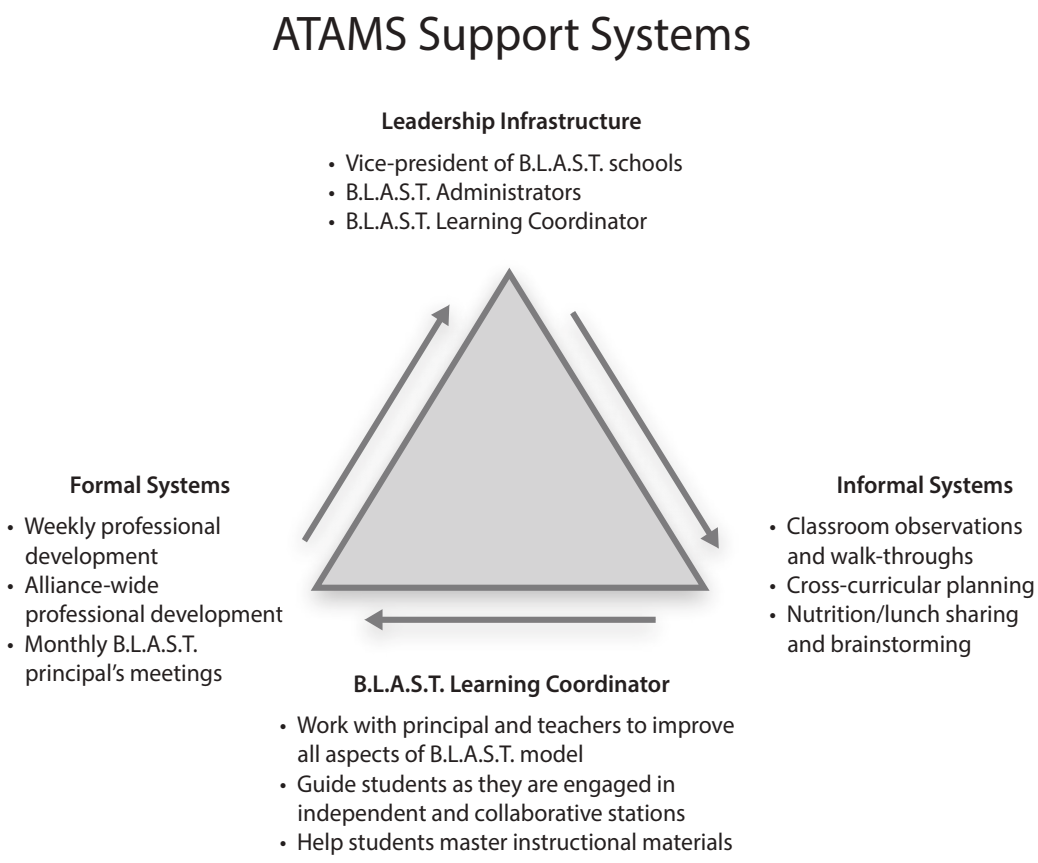

Figure 7-5 ATAMS support system

Parental Involvement

One of the Alliance's missions is to increase parental involvement by engaging parents as partners. In order to attend an Alliance school, students and parents must commit to completing forty hours each of volunteer service. While those hours can be completed in the community, Alliance makes it easy for parents to complete their required hours at school. Parents earn hours by simply coming in for a parent-teacher meeting or calling teachers for a phone conference. Teachers use Teleparent, a guided telephone service message system, to send mass messages out and make direct calls for individual student updates.

Parents often complete service hours in the main office or the counselor's office, which puts them directly in touch with the counselors and office staff that they speak with every time they call. Developing personal relationships with students and parents is key to student success and also a priority to ATAMS and the entire Alliance network.

Another way that parents connect with the school staff is through Advisory activities. Students have one advisory teacher for their entire high school career, and this is where students complete their Monday grade checks. The grade checks, as discussed earlier, are sent home for parents to sign. Parents have access to the Pinnacle grade

book and are encouraged to utilize this option. Parents can arrange to visit the school and may choose to sit in on any class to observe teacher instruction.

Operative Model

Alliance BLAST schools operate differently from traditional district and Alliance schools. Significant factors for the instructional model are inside the main schools' operations. ATAMS utilizes blended learning to make the most of the technology at hand. Blended learning is a "marriage" between online and offline content, data, and instruction. The beauty of the model is its flexibility for each student. During its first year in operation, some students embraced the technology fully, favoring typed notes to written notebooks and digital content videos to chapters in a traditional text. Other students preferred more traditional assignments and poster projects versus PowerPoint presentations and Prezi online presentations. The strengths of both types of students are acknowledged at ATAMS, while teachers also push students outside of their comfort zone. A well-rounded, college-ready student is comfortable and familiar with modern technology and can still take on less desirable roles with confidence.

MacBooks

For students to be able to bring their work with them from station to station in the rotational model, laptop computers were the obvious solution to student productivity. While MacBooks are more expensive than PCs, the operating system is more suitable for high school students. The issues of viruses, user-friendly accessibility, and lag time are also out of the picture, making these computers a top choice for students at ATAMS.

SMART Boards

ATAMS purchased five SMART Boards that are used across the Math, English, History, and Spanish classrooms. In Math, students and teachers alike use the boards for solving math equations together. In English and History, teachers may use them to mark up writing, notes, student work, and completed essays. In Spanish, the distance-learning instructor teaches ATAMS students from a remote location at another Alliance school.

Cisco Telepresence

ATAMS and Alliance look to Cisco's Telepresence Management Suite and Movi software to allow the distance-learning instructor to teach through the SMART Board to ATAMS students in Spanish 1 and 2 and Art.

Wireless Network and Access Points

By installing a wireless network instead of using the model one set up on the LAUSD campus, ATAMS has more flexibility and has allowed the BLAST model to flourish. ATAMS needs to have three access points per classroom to protect students from being blocked from the network. This has supported the BLAST model and saved ATAMS from any district-wide network shutdowns.

Human Capital

A long-term goal for ATAMS is to maintain 600 students with 17 core teachers. In a traditional model, ATAMS would need to have 24 teachers for that many students. In its first year, ATAMS supported 247 students and maintained 8 teachers—one in Science, History, Spanish, and Physical Education classes, and two in English and Math classes. Every teacher instructs five classes out of six periods in a two-day cycle, meaning that teachers only have one "prep" period every two days. Since class sizes are 48 students to one teacher, many instructors are responsible for over 200 students. While this is a concern, the initial lesson planning and guided online work balances out the technology in the classroom by cutting down the time spent on grading student work.

The BLAST model requires tech-supported teachers who are somewhat new to teaching. The teachers at ATAMS are all young and early in the field of work. The principal, Dr. Tubbs, noted that younger, novice-type teachers are more receptive to ATAMS because they are willing to put their spin on the technology-driven model.

Technology/Data

ATAMS provides its students with an array of online interactive tools, digital content, distance learning, and online courses. All students receive their own laptop, which they carry to each class throughout the school day. The online courses offered range from credit recovery, electives, Advanced Placement, and test-prep courses to early college courses. The technology provides distance-learning classrooms and data-informed instruction for teachers.

Credit Recovery

Credit recovery is probably the biggest draw to students transferring into ATAMS for the 10th and 11th grades. Students have seven class periods including Advisory. Five of those are dedicated to core courses and the remaining class is an elective. During this elective period, students who are behind in credits can take one or more online courses to make up for lost time. Online courses are supplemented with a notebook for writing assignments, which are graded by a credentialed teacher in the classroom. Students and teachers work together to keep students on track for timely course completion. Grades are determined by combining notebook writing assignments and online assessments, so even online courses are blended

to incorporate the human element. Incomplete courses do not receive credit, and teachers facilitating the online courses communicate with parents in the same way as core content teachers, informing parents of the student's progress and the need for additional tutoring.

AP Courses and Other Electives

Students who are ahead in class may be approved to take an eighth course online, provided they are earning exceptional grades. These talented individuals spend after-school hours completing online coursework that may not be available in the regular school-day schedule. Because this coursework is offered online, students can work from home or anywhere they have an Internet connection. Online courses are supported through credentialed instructor facilitation. A portion of the assignments are completed in a notebook and graded by the instructor. Online coursework is combined with notebook assignments for a complete grade. With small school sizes, charter schools often cannot offer such flexibility to advanced students. At ATAMS, thanks to blended learning, student options are almost limitless.

SAT/ACT Preparation

Blended learning is especially beneficial to students during their 11th and 12th grades as they begin to prepare for college and the application process. Many students cannot afford an SAT/ACT preparatory course. However, through the digital content provider Revolution Prep, ATAMS students are able to take an online course after school, facilitated by an instructor. Revolution Prep data shows significant improvement in test scores for students, and the low costs make it affordable for schools and free of charge to students.

Real-Time Data

The advantages of a blended classroom for students are easy to see, but ATAMS teachers benefit from the technology as well. With a laptop for every student, teachers can create online assessments that can be graded instantly. Having instant access to student data from online assessments helps teachers inform their instruction faster and more efficiently. A teacher can filter student results by an entire class, rotational group, individual, or even by a specific standard. These options allow teachers to customize learning for each class, group, and student.

Distance Learning

ATAMS utilizes its technology most impressively in the distance-learning Spanish class on campus. A master teacher at another school broadcasts instruction to an ATAMS classroom. The students observe and interact with the instructor through the SMART Board, while an instructional aide manages the independent and collaborative stations. In the fall of 2012, this program will expand to other electives and classes on campus.

Fiscal Model

Alliance College-Ready Public Schools acknowledges that the main reason for setting the focus on a blended learning model was to increase student-centered instruction. While that became the main concern, the issue of a more cost-efficient model came to rise as well. The BLAST model itself takes care of both concerns—supporting individual instruction to promote an increase in student achievement and creating enough savings for the school to be supported on public funds solely. This creates the hope that the savings will inspire long-term financial sustenance for current BLAST model schools, while freeing more funds for Alliance blended campuses. This method is based on the principles of reinvestment and sustainability: utilizing all of the proper resources while creating new products at the same time.

In terms of spending and cost effectiveness, ATAMS did incur blended learning-related expenses, including startup and operational costs. This past year alone, the costs exceeded the savings. This was due to under-enrollment, more than the model not being effective. ATAMS is a public school choice charter, meaning that the district has more control than the CMO, in terms of student enrollment. LAUSD advised Alliance to expect 450 students the first year, many of whom would be from local schools that had maxed out their enrollment. Unfortunately, LAUSD's prospect was incorrect; ATAMS received only 247 students the first year. This issue has added to the negative effect between the BLAST-related savings cost and has postponed the time frame for reinvestment and sustainability to take place.

There are a few upfront investments that have taken place in the blended learning model. Two of these are non-recurring expenses in implementing the BLAST model. Alliance hired Education Elements for consulting services to aid in the design and to oversee the initial startup in 2010-2011, and for additional support the following year for the linear modeling and digital dashboards provided to the students.

There are recurring costs that build on the BLAST model. The largest ongoing expense is BLAST-related staffing support and personalized student-centered technology. In order to correctly and effectively apply all of the technology to the model, ATAMS hired an on-site IT support technician. An annual cost of $371 per student is expected from ATAMS for this position and the additional instructional aid position, which was added to the distance-learning classroom for Spanish. The MacBooks, software, and additional technology used in the BLAST model also increase costs. The bulk cost of the MacBooks is $915, but the value decreases over three years, leaving the per-student laptop cost at about $305. Additionally, software licensing costs, including educational software products like Achieve3000 and Compass Learning, brought costs to $449 per student.

There is also a financial benefit in using the BLAST model. Each certified teacher at ATAMS represents a total expense of $62,500, including benefits. By using 8 teachers instead of 11 this year—the usual number of teachers for an Alliance startup—ATAMS saved $187,500. When ATAMS does reach full enrollment, this number could possibly grow to $437,500 by using 17 teachers instead of 24.

Looking at both savings and costs, ATAMS is not seeing any instantaneous financial benefit from the BLAST design, but that is due in part to the low-enrollment referenced earlier, which is also a temporary factor. Bringing in fewer teachers has offset this, but ATAMS is still facing a net cost of $461 per student or $113,867 overall until enrollment increases. With increasing enrollment in the future years of the school and the expansion of the distance-learning strategy, the financial benefit will reach its full potential over time.

ATAMS Year One Data

The following data shows ATAMS student benchmark growth in English Language Arts and Math. Benchmark exams are taken by all Alliance high school students on a quarterly basis in preparation for the CST.

Table 7-3 ATAMS student benchmark growth in English Language Arts

ATAMS student benchmark growth in English Language Arts				
English Language Arts	**2011–2012 Benchmarks**			**CST**
	BM1	**BM2**	**BM3**	**2012**
Student Tested	191	232	211	206
Advanced	1.0%	2.6%	4.3%	6.3%
Proficient	22.0%	25.0%	45.5%	27.2%
Basic	38.2%	46.6%	35.1%	35.4%
Below Basic	33.0%	24.6%	13.7%	19.9%
Far Below Basic	5.8%	1.3%	1.4%	11.2%

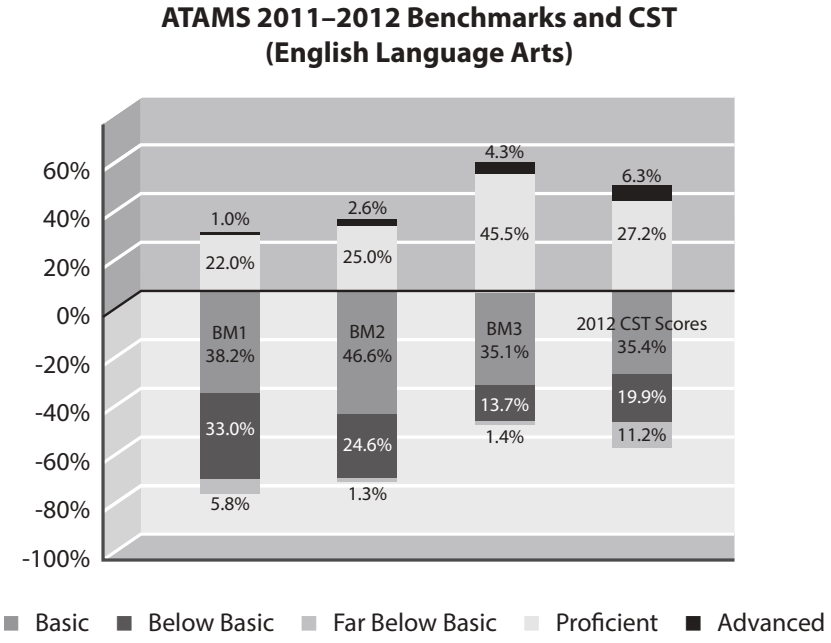

Figure 7-6 English Language Arts exam results

Table 7-4 Mathematics exam results

ATAMS student benchmark growth in Math				
Math	**2011–2012 Benchmarks**			**CST**
	BM1	**BM2**	**BM3**	**2012**
Student Tested	183	208	212	205
Advanced	6.6%	9.1%	3.3%	2.4%
Proficient	29.0%	37.5%	19.8%	10.7%
Basic	26.2%	35.1%	49.1%	16.6%
Below Basic	31.7%	17.8%	26.4%	40.5%
Far Below Basic	6.6%	0.5%	1.4%	29.8%

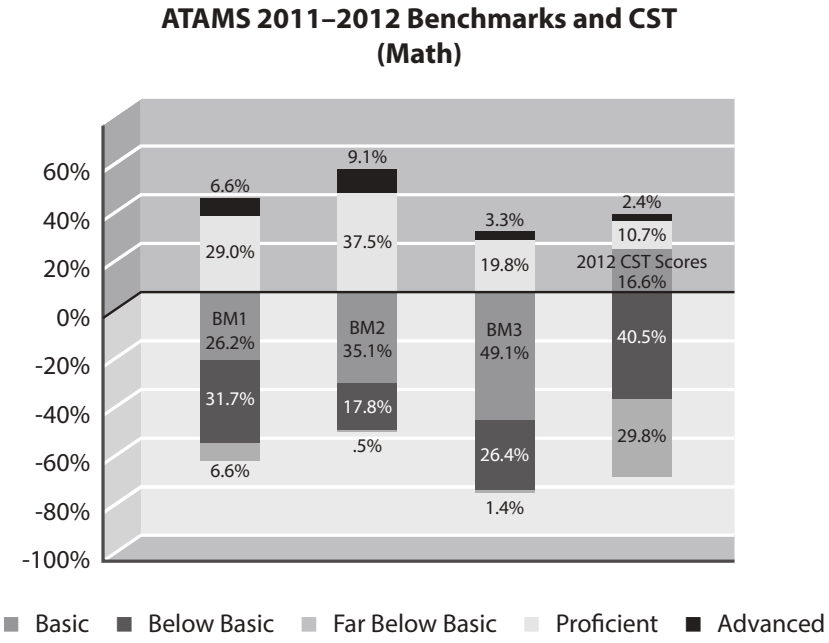

Figure 7-7 Mathematics exam results

ATAMS benchmark and CST data show significant upward movement across proficiency bands, specifically in the U.S. History, English 11, and Biology classes (see Appendix B, Chapter 7).

In California, all students must pass the California High School Exit Examination (CAHSEE). Students first take this test in 10th grade and have multiple chances to retake the test in 11th and 12th grades.

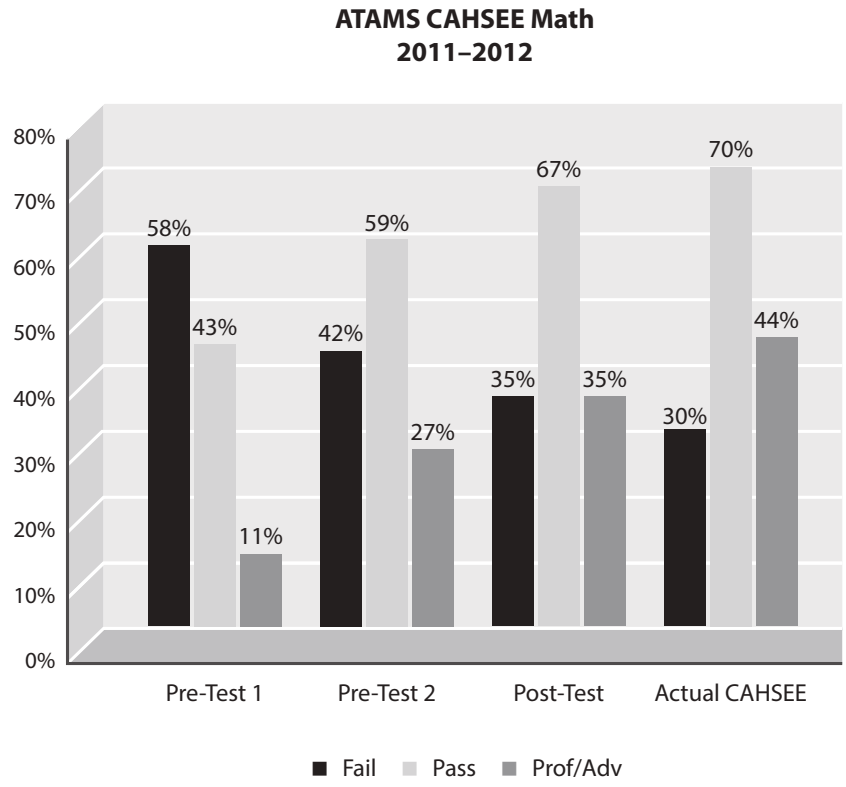

Figure 7-8 CAHSEE Mathematics exam results

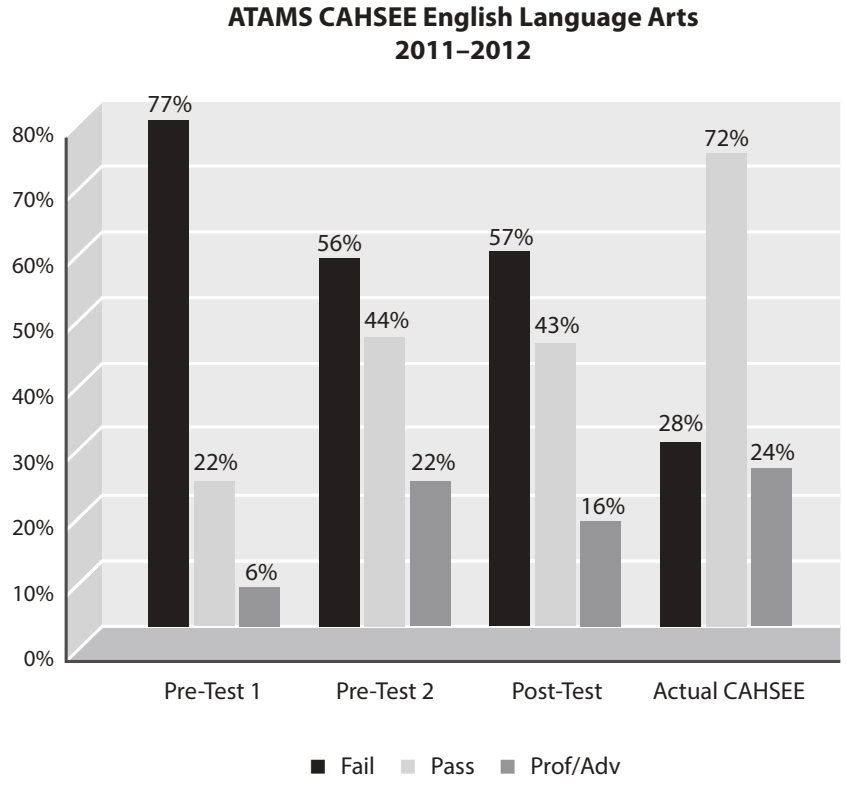

Figure 7-9 CAHSEE ELA exam results

While the ATAMS fall 2011 ELA pre-test data predicted a mere 22% pass rate, by spring, 70% of 10th and 11th grade students taking the CAHSEE passed both the English and Math sections of the exam.

ATAMS 9th and 10th grade students took the Northwest Evaluation Association (NWEA) exam in the winter and spring. The NWEA test determines where student scores are, compared to the national average by an RIT score, which indicates a student's instructional level based on an equal interval scale.

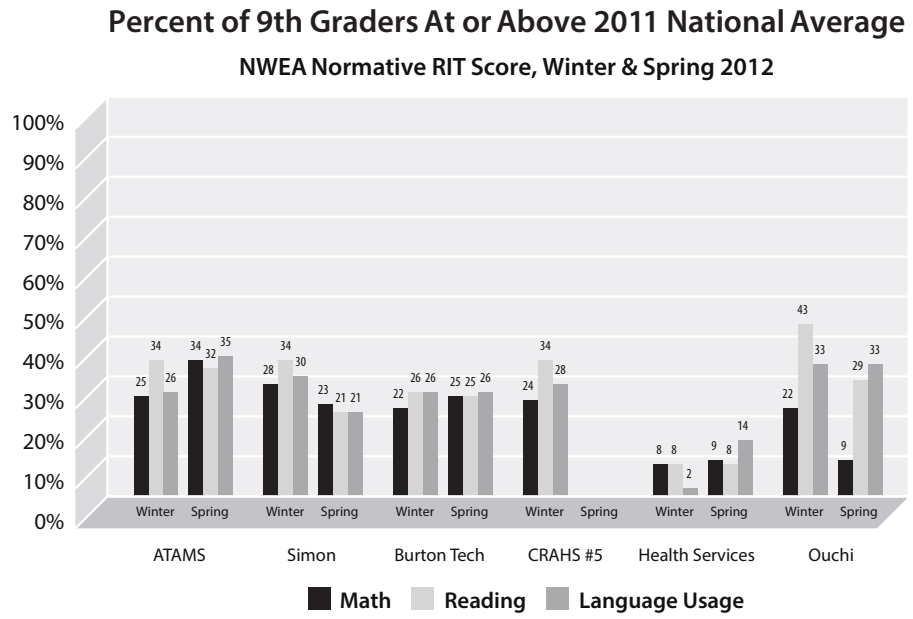

Figure 7-10 NWEA Normative RIT results, grade 9

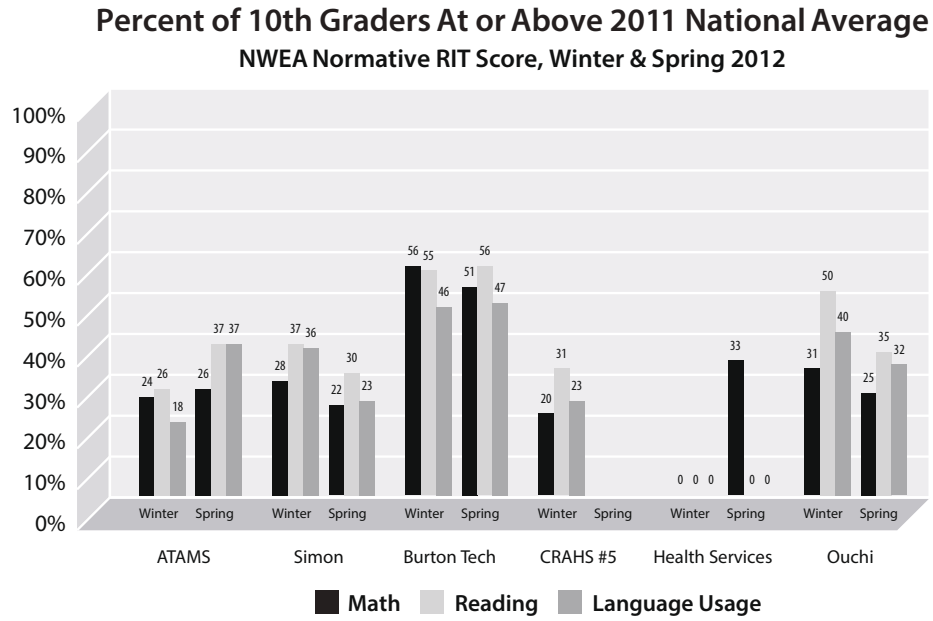

Figure 7-11 NWEA Normative RIT results, grade 10

ATAMS 9th and 10th graders taking the NWEA test showed significant improvement from winter to spring, moving toward the national grade-level average.

BLAST Year One Lessons

As the first Alliance school to fully implement the BLAST model during the 2011–2012 school year, ATAMS was a blended learning guinea pig and definitely faced challenges. The question on every teacher's mind was, "How can we make this model work?" Eager and enthusiastic to learn, teachers struggled to discover the best practices that have become essential components of blended learning training this year. The main complaint from teachers was a lack of in-depth training during the summer of 2011. The real challenge for the administration team and the Alliance CMO was the lack of training support. The BLAST model was truly an experiment, albeit grounded in solid evidence from pilot schools. In addition to the lack of experienced blended learning teachers and administrators to offer intensive professional development, the digital content providers were not yet fully integrated into the HLMS Dashboard. This meant that teachers spent the first few weeks of school becoming experts on the digital content while simultaneously utilizing it in their lesson plans. Classroom management was another challenge. While all ATAMS staff was carefully selected, even experienced teachers had to make adjustments to create new classroom management strategies for the three stations. The addition of Remote Desktop software (an online spy technology for teachers with laptops in their classrooms) helped facilitate better management of off-task behavior on the computers. During professional development meetings teachers shared strategies that worked in their classrooms and administrators worked these strategies into school-wide protocol so that students knew their expectations, regardless of the current class period. The development of the collaborative group role protocols helped keep students accountable for their participation in the collaborative station. Exit slips became a signature practice, and teachers began assigning a five- to ten-minute reflection or mini-quiz at the end of each station to assess learning without having to leave the direct instruction group. Finally, creating the BLAST Learning Coordinator position was essential to providing support to teachers who needed help in real time. If a collaborative lesson was falling apart or a student's computer would not connect to the digital content, the BLAST Learning Coordinator would assist, freeing up the teacher's time to provide that essential small group direct instruction. ATAMS teachers list clear and consistent rules and regulations, easy to understand digital agendas packed with activities, sharing of best practices during professional development, and extensive training on content providers as some of their blended teaching essentials.

Implications

Implications of blended learning for teachers are threefold, including instructional, planning, and professional development. From an instructional standpoint, teachers are able to personalize instruction through differentiation. Teachers are acutely aware of students' needs by accessing the data provided by the digital content. This allows teachers to hone in on the instructional component for students in the direct instruction, independent, and collaborative stations. While assessing a student's collaborative skills and productivity is different than

assessing online data, each student is held accountable through group accountability. The blended learning model has shown extensive gains in student progress in one year's time. Students hold one another responsible not only for their grade but also for their academic motivation. Through the use of online digital providers like My Access and Achieve3000, students share their scores and accuracy rates in the classroom. This trade of "performance levels" between students raises the expectation, rigor, and aptitude for each student.

The lesson planning required by teachers is extensive in that they are planning for three stations versus one lecture to the whole group. While there is still a direct lesson and lecture portion to the model, the teachers must strategically plan and introduce an independent lesson and collaborative lesson to students who are working on their own. This creates a challenge and forces the instructor to constantly differentiate plans, review exit slips for student understanding, and evaluate online data to make sure students are mastering state standards and the online content.

Professional Development

Professional development (PD) takes place each Wednesday afternoon from 1:30 to 3:30. Students are dismissed at 1:30, and teachers reconvene to discuss signature practices, evaluative roles, teacher/staff support, and expectation protocols. Professional development allows administration and teachers to view their work from a collaborative mindset. Each PD agenda is outlined by the principal and is led by staff members, based on their practice and specialty. Each meeting begins with a "check in" question and department reports, and then leads into specific panels led by teachers and administration.

While each PD meeting is unique, the objective is to discuss better practices and support for each ATAMS staff member.

Policymakers

Policymakers are interested in the analysis of blended learning programs. This model provides a new educational viewpoint to all interested parties. If the model proves to be financially superior to a traditional classroom structure and better for student achievement, the BLAST model may be able to turn a positive spin on the current education structure. The main concern in this model is the rise in the initial investment to increase savings over time, specifically producing savings to invest in new BLAST schools. Policymakers have a significant part in the structure of ATAMS because of the financial and emotional support that they provide the students. The policymakers produce the opportunity.

Digital Content Providers

The multiple digital content providers that support ATAMS (Achieve 3000, Revelation Prep, APEX Learning, My Access, Brain Honey, Compass/Odyssey Learning) support student learning in and out of the classroom. It is through these online tools that students are able to access their current academic standing any hour of the day. While these programs are known as the classroom "textbooks," they also provide instant feedback to the teacher on any student's status and work. The student and teacher *dashboard* of each content provider offers an array of data to make any changes in lesson plans and differentiation for the direct instruction station and the student.

Future Goals

The future goals of ATAMS, and Alliance charter schools at large, are focused on student achievement and fiscal balance. For ATAMS, the primary goal is to reach maximum enrollment so that the financial aspect of the BLAST model can invest in opening future blended learning schools. Alliance College-Ready Public Schools have invested in the model for continued student success and to support its overall mission to create high-performing schools in low-income communities that will annually demonstrate student academic achievement growth and graduate students ready for success in college.

About the Authors

Dr. Michelle Tubbs is the founding BLAST principal for Alliance College-Ready Public Schools. Prior to opening Tennebaum Family Technology High School in 2011-12, she was the founding principal of the first BLAST school, Alliance Bill & Cindy Simon Technology Academy High School in 2010-11, focusing on blended learning pilot in English and Math classes. Dr. Tubbs also served as the Director of Math Instruction at the Alliance Home Office working on the first BLAST pilot in math intervention classes. Dr. Tubbs resides in Long Beach, CA and plans to continue codifying signature practices for blended learning and creating instructional modules for principals and teachers interested in pursuing blended learning.

Ramisi Dilley is the BLAST Learning Coordinator at Alliance Tennenbaum Family Technology High School in Los Angeles, CA. When Tennenbaum Tech (formerly ATAMS High School) opened in 2011 with a fully blended learning model, Ms. Dilley joined the team to research best practices and support teachers and administrators in real time. Ramisi currently resides in Los Angeles and plans to continue providing training and consulting services to educators in the blended learning movement.

Brian Redmond teaches 9th grade English in Los Angeles, CA. He began his teaching career creating the BLAST model for the humanities department at Alliance Technology and Math Science High School in 2011. Brian currently resides in Pasadena, CA.

SECTION FOUR

School Programs

CHAPTER

8

Teaching and Learning Today, in the 21st Century

Alan K. Rudi, Prinicpal Solutions Strategist,
Thesys International

Today's learners are tech-savvy, knowledge hungry, and world aware . . . we can make education even more relevant for this new generation by appropriately applying technology to teaching and learning. The blended education model achieves this objective by integrating the classroom and online technologies, improving student outcomes.

Blended learning integrates the classroom with web technology and tools. This chapter documents the course development, design, process, results of pilot programs, key lessons learned, and implications for the future of education. Using the blended education model and Thesys curriculum, students' pass rates noticeably improved, they were more engaged in the learning, and teachers successfully incorporated technology into the teaching process.

Context

Thesys International and Fairmont Preparatory Academy (FPA) are divisions of Fairmont Education Group in Anaheim, California. FPA is a private high school with 659 students. Sixty-four percent of the student population is international, from countries such as China, South Korea, and Vietnam. The majority of students are from middle-class and upper-middle-class families. Thesys International (Thesys) develops blended curriculum and learning programs for use at FPA and other high schools globally.

In 2008, the owners and executive management team of Fairmont Education Group saw the emergence of education technology for its potential to improve learning outcomes. Fairmont recognized that maintaining its status as a leading school in the Orange County area would require the development of technology as part of their academic strategy, and that in doing so they could potentially create new markets for the school owners. In November 2009, the United States Department of Education concluded in its meta-analysis of online programs that the "difference between student outcomes for online and face-to-face classes was larger in those studies contrasting conditions that blended elements of online and face-to-face instruction with conditions taught entirely face-to-face" (Means, Toyama, Murphy, Bakia, & Jones, 2009). This study led Fairmont Education Group to pursue a blended curriculum development program and the purchase of a Learning Management System (LMS). In 2010, Fairmont Education Group officially launched its blended learning division, Thesys International.

The blended learning program, which began in early 2009, was created to develop digital curriculum for use at Fairmont Private School, and potentially other K-12 schools. Fairmont's executive management team had studied and discussed the role of digital curriculum in schools for about five years. A consultant was hired and a detailed research study was conducted. This study concluded that, while education technology had not yet been well developed in K-12 schools, students were nevertheless growing up with technology and wanted its use in their school experience. At the same time, universities were making significant use of technology for learning. Therefore, if students are to be prepared for college, then technology must be part of the K-12 education process. More importantly, Fairmont realized that education technology had the clear potential to further improve academic outcomes of students. The vision of today's program is based on a simple belief that "today's learners are tech-savvy, knowledge hungry, and world aware . . . we can make education even more relevant for this new generation by appropriately applying technology to teaching and learning" (Rob Chandler, CEO Fairmont Education Group). Today, the program has evolved to serve 659 students during the academic year 2011–2012 and served 226 students during the past summer term (2011).

Overview

Thesys and FPA conducted their first blended courses in the summer of 2010. Based on the learning from this program and other research, Thesys began development of its own courses. Using the models described in *The Rise of K–12 Blended Learning* (Staker, 2011), Thesys and the FPA developed digital curriculum as follows.

1. **Fixed schedule** (aka "blended")—17 College Prep (CP) and Honors (H) level courses:
    - English I, II, III CP
    - US Government CP
    - World History CP
    - US History CP
    - Economics CP
    - Chemistry CP, H
    - Biology CP, H
    - Algebra I CP
    - Algebra II/Trig CP
    - Geometry CP
    - Pre-Calculus CP, H
    - Health
2. **Flex schedule**—90% Online with Teacher on-site 10%, 10 Advanced Placement (AP) level courses:
    - Chemistry AP
    - Biology AP
    - Environmental Science AP
    - Physics B AP
    - Physics C AP
    - Calculus AB AP
    - Calculus BC AP
    - Statistics AP
    - Macroeconomics AP
    - Microeconomics AP
3. **Online** (100%)—English as Primary Language
    - Basic, Beginner, Intermediate, and Advanced levels

In 2010–2011, Thesys produced its online curriculum in a team process. Curriculum writers and instructional designers teamed together by content area to create courses, with a total of more than 30,000 man-hours spent in the first phase of development. Experts were sourced from around the country, based on experience in developing curriculum (classroom and online) and participation in graduate education programs. Subject Matter Experts (SMEs) with teaching experience in the classroom were sourced from graduate education programs in local universities (e.g., Claremont Colleges, UC Los Angeles, Pepperdine University, CSU Fullerton, and Chapman University). Instructional designers were sourced from around the country (Florida, Tennessee, California, San Francisco, Denver, Phoenix, etc.). These contracted designers wrote and built Thesys content, based on Thesys Course Design principles and objectives for learner interactions, activities, resources, material, technology, assessments, and measurements, with the goal of creating a unique learning experience that addresses multiple learning styles, incorporates multiple strategies, meets Common Core standards, incorporates 21st century skills, and facilitates student achievement at high levels. Design teams were led by Thesys product architects. Through a series of face-to-face and online sessions, progress was monitored and content area improvements implemented. In version 3.0 of their course development, Thesys continues to work with contractors and staff instructional designers to maintain and upgrade courses.

A course development guidelines website was built to share information and ideas between curriculum writers and instructional designers while developing courses. It consisted of:

1. Orientation
    - Course Development Process
    - Things to Know (about blended learning)
    - Current Syllabi (from traditional, classroom-based courses at FPA)
    - Building Interactivities (how-to's)
2. Content Standards Descriptions
    - Common Core Standards
    - California State Academic Content Standards
3. Blended Learning Class Definition and Ideas
    - Pedagogies by learning environment (class versus online)
    - Mixing class and online time—what fits?
4. Discussion Board (for developers to ask questions of one another and share ideas)
5. Summer 2010 Case Study (from FPA and Thesys)
6. University of California a-g Course Requirements and Document Templates

Digital teaching materials used in the courses were chosen based on the following criteria:

1. Appropriate to the lesson plan outlined by the SME
2. Ability to meet learning objectives
3. At grade level; ease of understanding
4. Compatible with Internet browsers, LMS, and standard programs used in the industry
5. Ability to maximize availability of audio and/or video formats to meet different learning styles
6. Ability to minimize students being taken out of the course environment with the use of embedded tools like Geogebra (integrated into the LMS versus going to another website)

The design goals were to organize and integrate Web 2.0 tools with books, lesson plans and typical classroom activities, based on the following design principles:

1. Student-centric, based on identified best practices in universities
2. Integrate Open Education Resources into a core structure
3. Develop 21st century skills-based content
4. Use of multiple teaching strategies throughout
    - Peer-to-peer learning
    - Situational learning
    - Experiential learning
    - Socratic method of teaching
    - Inquiry-based learning
    - Project-based learning
5. Use of California State and Common Core Standards

Professional developments modules were purchased from Boise State University and embedded into the LMS to aid classroom teachers in learning how to teach in the online environment. These professional development modules provided independent study and discussions with Thesys's support team in: 1) Best Practices in Online Learning, 2) Blended Learning, 3) Effective Online Learning Environments, and 4) Student Success Online.

The training modules were modified to allow teachers to learn by doing, and to provide embedded resources and best practices in the portions of the LMS that were most relevant to what teachers needed at the time of teaching their students. Web 2.0 tools were added for teachers to gain experience with:

1. Discussion boards
2. Geogebra
3. Glogster
4. Mind Mapping
5. Prezi
6. Poll Everywhere
7. Quizlets
8. Timelines
9. Twitter
10. Wiki Projects

The courses were created with Blackboard as the LMS provider, text books (based on the SMEs' research), and the integration of Open Education Resources through extensive Internet research in a collaboration between the SMEs and instructional designers.

Results

With completion of the course development process in June 2011, the blended courses were conducted by Fairmont teachers in the summer term of 2011. There were 226 students enrolled in 281 courses in FPA's summer blended program, an increase of 52% from summer 2010. Significantly, 35% of the students were non-Fairmont students, from other schools throughout Southern California.

At the conclusion of the courses, student outcomes were measured by tabulating the grades and comparing them to the past school year (2010–2011) and prior summer term (2010). Figure 8-1 compares the same set of seventeen College Prep courses in three different cases: 1) summer 2010 using an outsourced online curriculum in a blended delivery format, 2) equivalent courses conducted during the school year in a traditional classroom format with standard Fairmont curriculum, and 3) summer 2011 courses using the Thesys-produced curriculum developed as previously described. While there were different students in each of the three cases, it was largely the same set of teachers.

The results indicate a high pass rate of the courses (grade of C or better) at 89% increasing to 94% (+5%) in the summer of 2011.

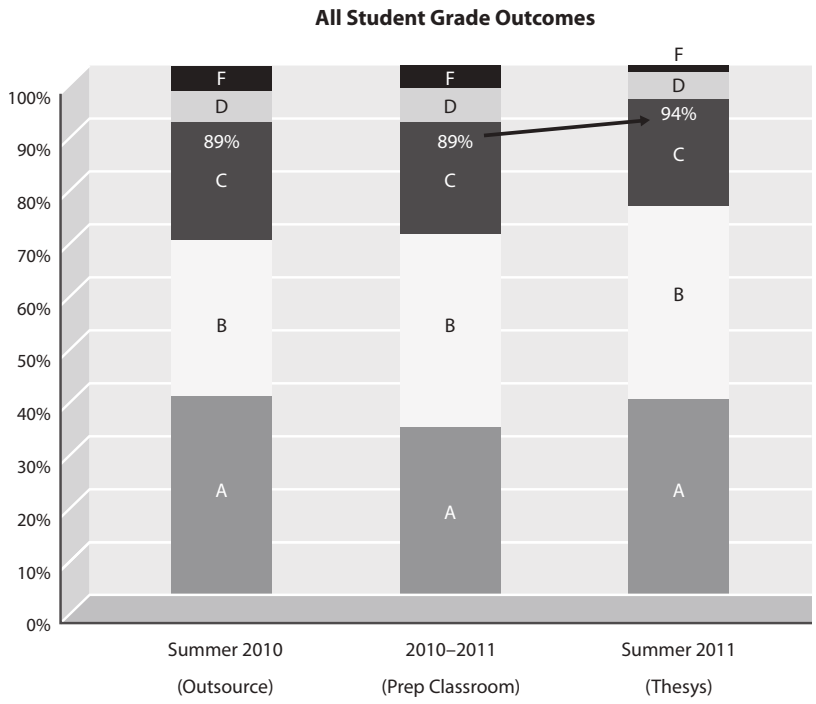

Figure 8-1 All Student Grade Outcomes

The same pattern of improvement was observed for students taking courses for advancement (i.e., taking the course for the first time in order to advance their high school schedules to enable them to take additional courses in the future) and for remediation (i.e., to repeat a course after a prior failure).

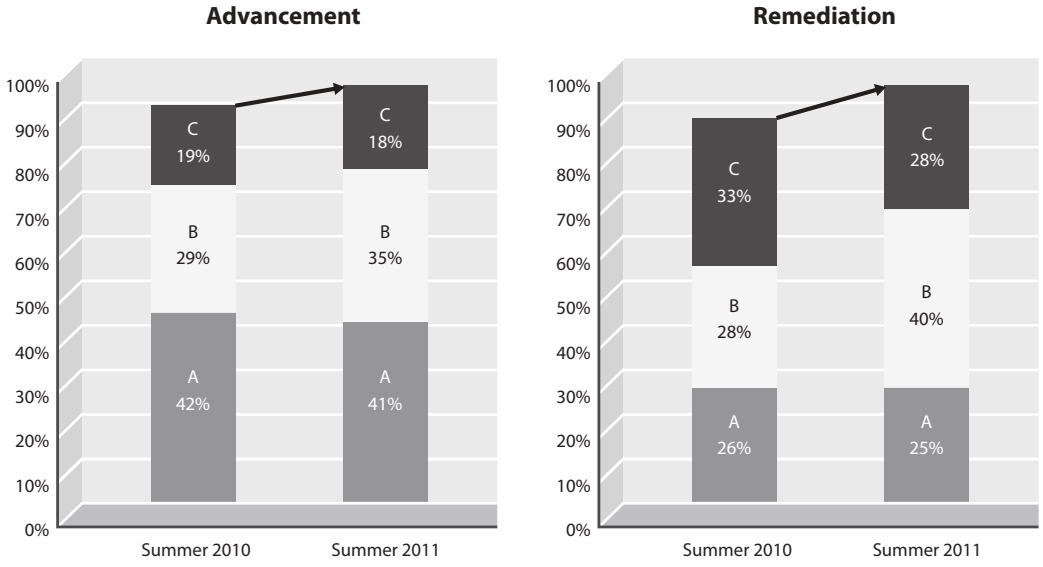

Figure 8-2 Advancement And Remediation Student Outcomes

To understand the potential impact of a blended course on student outcomes, the summer 2010 results were compared to the "next level" course in the first semester of the 2010–2011

school year (for example, if Algebra I was taken in the summer for advancement and is a prerequisite to Geometry, then those student outcomes were measured against their performance in the following Geometry course the next semester). The same grade was defined as +/- a half grade in the next level course (e.g., a B and B- are the same), and better or worse differs by a full grade or more (e.g., B to A is better and C to D is worse). The results indicate that students were able to successfully continue their learning after taking a blended course, as 79% of the students got the same or better grade in the "next level" course.

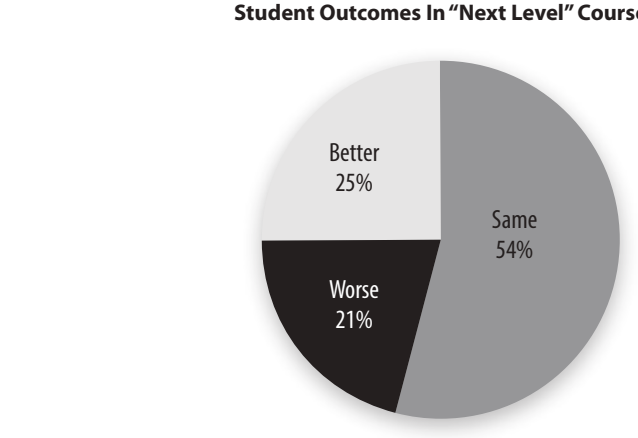

Figure 8-3 Student Outcomes In "Next Level" Course

At the conclusion of the summer 2011 program, students were surveyed, based on iNACOL standards for quality online courses (International Association for K-12 Online Learning, 2009), to learn about their experience. Overall, 90% of students gave the courses a positive evaluation (41% of students responded).

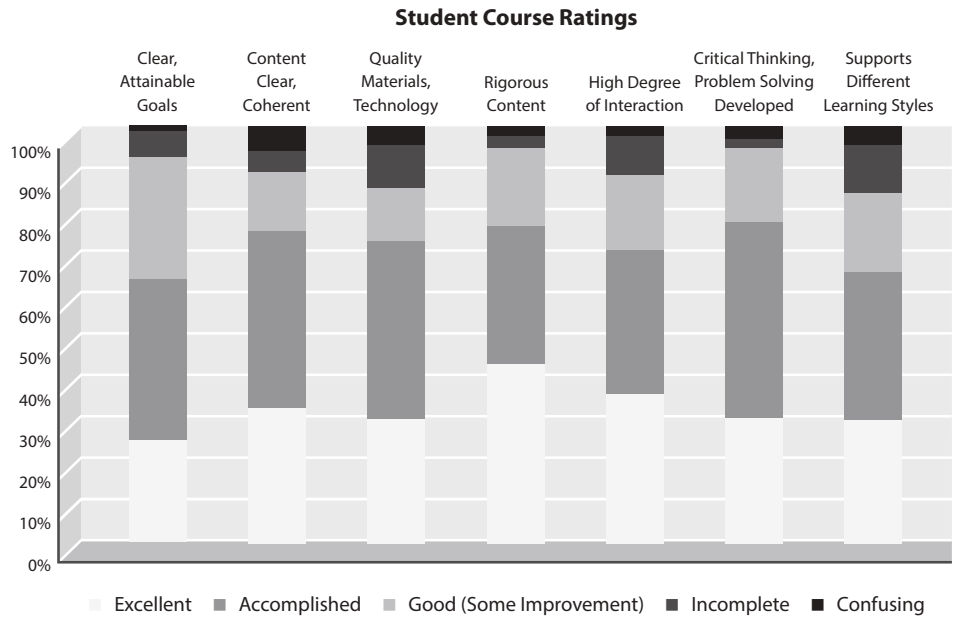

Figure 8-4 Student Course Ratings

In addition, written comments from students in the survey indicate three conclusions:

1. Overall, students liked the courses and made suggestions for improvement.
2. Students who did not like the courses indicated a need for more classroom time and less technology. This belief was held by the students who performed poorly in a course.
3. Students still highly value the teacher role, and challenge the teachers not to rely too much on technology.

Select student quotes are provided in Table 8-1 (specific names have been kept anonymous).

Table 8-1 Student Quotes (Comments)

Student Quotes (Comments)	
About Hybrid Model	**About Course Content**
• I really like the online stuff, however, the class is challenging. • Wish we could do a little more in class like partial activities and finish the rest at home, but I really have learned a lot. • Nothing it was a fantastic summer school. • Everything is good! • The online program was sufficient, as a matter of fact, excellent as far as information needed ahead of time for class. • I think the hybrid class is pretty good because you can arrange your time wisely.	• Very good! • It's good how it is. • It is a good and interesting class already. Other classes should be like this, not putting too much things on the students that become some stress. • Personally don't have any suggestion on improvements. • Great course! • Good class but too much homework. • No big suggestions. • The course is already very good. • The online videos really helped.

Teachers were also interviewed to determine how the program impacted the nature of teaching and learning. In general, teachers expressed that they wanted to use more digital content for their classrooms after they experienced the use of Thesys courses, and made the conclusions shown in Table 8-2.

Table 8-2 Teacher Interview Comments On Blended Education Model

Teacher Interview Comments On Blended Education Model	
About Hybrid Model	**About Course Content**
• Teacher and Technology is the best of both worlds, a positive • The organized curriculum opens up a teacher's eyes to what is possible with technology. • Students get to manage more of their own learning. • It felt like school to me. • Great resource tool. Can reinforce the difficult topics, basics, fundamentals. • Online provides a better, organized access to information that aids instruction. • It's a good model, students get to use technology, do things on their own. It is better than online due to the teacher role. • Definitely more teaching time and less administration of the course. It opens up class time.	• Allowed students to dig in deeper on topics. Gave them more enrichment activities than just the book. • Students benefit by the organization of the content — see the whole course and can relook at information as they need.

During the 2010–2011 school year, Thesys also ran a U.S. Government course with another school in Southern California. Measures of student activity on the LMS were provided every two weeks. The initial report saw low student use at the beginning of the class when compared to usage levels correlated to an "A" grade. When students saw the report, usage went up. At Thesys, further correlations by course have been developed based on summer 2011 results. Figure 8-5 clearly illustrates that LMS usage levels are correlated to the grades students received in Honors Biology. Therefore, student study behavior measures can be tracked to support achieving higher outcomes. More importantly, student behavior can be affected by the measurement and reporting.

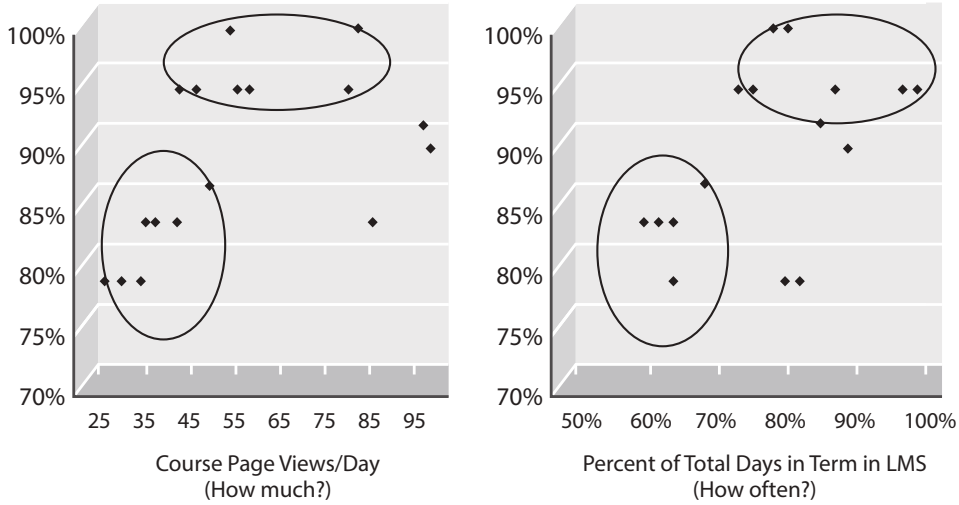

Figure 8-5 Honors Biology Grade Correlations To LMS Usage

Implications

Practices and Strategies Implemented

Allocation of time split between classroom and online activities is an important decision. Initial time allocations were based on prior experience of the team in the university environment, and in consultation with teachers. This allocation was subsequently changed for summer 2011, based on the teachers' experience during the summer 2010 program. Teachers found that in the areas of Science and Math additional class time was needed for labs and face-to-face instruction. After completing the summer 2011 program, this time allocation was judged to be appropriate for a fixed-schedule model, shown in Table 8-3.

Table 8-3 Allocation of Time

Allocation of Time		
Subject	**Percent of Time Used in Classroom / Online Summer 2010**	**Percent of Time Used in Classroom / Online Summer 2011**
Sciences	40% / 60%	60% / 40%
Math	40% / 60%	40% / 60%
English	40% / 60%	40% / 60%
Social Sciences	20% / 80%	40% / 60%

Technology support and gaining an awareness and understanding of the course content is important for both teachers and students. Thesys provided the course to teachers three weeks in advance for their review and customization. It is also important to introduce students to the increased expectations for responsible time management, thorough follow-through, and independent activity, all of which contribute to their success in the class. Students were provided access to the course one week in advance of the class start date, to allow them to preview the course and become familiar with the navigation and available resources. If students had technology-related issues, they received advance assistance via email or phone help desk. System requirements were provided in advance, in both writing and email. Finally, on the first day of the program, all students (by course) met together in the computer lab, enabling teachers and staff to confirm usernames and passwords, then access the course to review navigation, etc. The teachers reviewed course materials, directions, and discussed the first assignment that uses the online components. As a result, students were able to get started and engaged in the course, as well as with one another and their teacher.

Lessons Learned

Students indicated that they like the blended education model, as they still want a teacher actively involved in their education, but also want the availability of technology.

Blended education is an innovative form of teaching and learning because it marries the best of both worlds. It is what digital natives want, capitalizing on the strength of student motivation as an indicator of student success. In the experience of FPA, however, if teachers need to set up the course content on their own, the online will suffer; teachers need help developing the integration of the classroom and online curriculum, selecting technology tools, and finding available quality content. Below are the key lessons learned from teacher and student feedback.

> ***"Blended [learning] is a good education model as it enables students to use technology and to engage in more diverse learning activities on their own outside of the classroom but still have the value of a teacher and teaching."***
>
> —Holly Wilson, English Teacher

Aha's

- There is a significant benefit to students having the whole course laid out in advance for them via the LMS (compared to students seeing the course one week in advance in a typical classroom environment). This approach provides clearer expectations and allows students to work in advanced areas; they can work when they want to with the online component and can become more independent and responsible for their own learning.
- Teachers should not rely on the technology to do the teaching for them; they can still be demanding of the students (the risk is to unconsciously compensate because the use of technology can falsely lead to thinking that the teacher can do less).
- Teachers don't need to use all the technology because it is there; they are still in charge of the responsibility and control.

- Be flexible and open-minded, take chances, and don't be afraid. Teachers will be surprised by the positive student response.
- The organized, integrated curriculum opens up teachers' eyes when discovering what is possible.

Teaching and Learning

- Make sure that students know the pacing and rigor, prior to starting the course (online ≠ easy).
- A real-time student response assessment is more important in a blended model than in the brick-and-mortar classroom model because students are in person less often.
- The blended model allowed students to dig deeper on a topic via the use of multiple pedagogies that often cannot be done as much in just the classroom.
- When virtual labs are used for practice online, wet labs work much better (less time, more learning).
- Blended learning definitely changes how teachers plan to teach other courses. They are increasingly adding the use of technology tools that they learned in the blended curriculum to their other courses.
- For most blended classes, a change occurred in the allocation of time to less management/administration of the course and more time spent teaching (post the initial learning curve). Why?
  - Students are, by definition, doing more independent work via the LMS.
  - Though meeting fewer days, there is more time spent in class meeting with students. A course fully laid out in advance frees up class time to focus on the most critical concepts and to go into more depth.

Course Management and Logistics

- The schedule and pacing is provided and students do learn time management. Students, however, still need accountability and help to learn time management.
- Most students immediately understand the LMS and Web 2.0 tools on their own. However, 10% to 20% still need support and motivation during the first few weeks.
- Teachers need to stay on top of the LMS mechanics, most significantly the dates for assignments or tests to be released by the system.
- Teachers need to be more disciplined in communication practices (but this is a good thing).
- The LMS is designed to automate, streamline, and reduce the cost and effort required for managing an external learning program.
- Parents do need to take an active role in student learning to monitor the student's follow-through with the online activities, similar to the classroom-only environment.

- There are good options for handling the potential to cheat online. They include:
  - Set up online quizzes to be timed (so there is minimal opportunity to cheat)
  - Randomize the questions and possible answers to the questions
  - Conduct tests in class or have students bring their laptop (if available) for use
  - Conduct tests in a computer lab proctored by the teacher

Researchers

Students do get distracted by other things like social media when doing online work, but this is also true when studying the conventional way. The use of an LMS in blended learning enables students and course content to be tracked when at home to measure their studying time (e.g., number of accesses + days online + time spent). However, the LMS does not provide good tracking information. There is a need to develop useful measures of not just activity, but also to identify what activity levels are needed to achieve a good grade. Outcomes in the program are for the grades earned in a course, but there are other factors at play as well. While the results are encouraging, educators need to continue studying the impact of technology on learning, grades, and test scores.

Policymakers

The authors believe that the student to teacher ratio can be handled at today's higher levels (e.g., 25–35 to 1), though not as seen in higher-education, online-only courses (e.g., 100 to 1). Blended learning is an opportunity to create flexible schedules for teachers and students, as illustrated in Table 8-4.

Table 8-4 Example of a Blended Learning Schedule

CP Hybrid (Student studies 3+ subjects/night					
Period	**Mon**	**Tue**	**Wed**	**Thur**	**Fri**
1	Open study time	8:00–9:55 English (Econ teacher prep time)	8:00–9:55 Econ (English teacher prep time)	8:00–9:55 English (Econ teacher prep time)	8:00–9:55 Econ (English teacher prep time)
3	10:10–12:05 U.S. History (Algebra teacher prep time)	10:10–12:05 Algebra (U.S. History teacher prep time)	10:10–12:05 U.S. History (Algebra teacher prep time)	10:10–12:05 Algebra (U.S. History teacher prep time)	Open study time
Lunch					
5	12:40–1:35 Biology	12:40–1:35 Biology	12:40–1:35 Biology	12:40–1:35 Biology	12:40–1:35 Biology
6	1:40–2:35 PE	1:40–2:35 PE	1:40–2:35 PE	1:40–2:35 PE	1:40–2:35 PE

Teachers

The blended education model extends and enhances the valuable role that teachers play in education (a job should not be lost because of technology). It changes the classroom dynamic, enabling teachers to do more of what they love (teach). It allows teachers to focus on areas of pedagogy, such as lesson planning, emphasizing overarching objectives that have a higher impact on student learning.

Students

Most students are very good at using technology because of using it for activities such as games, but they should also be able to experience technology as a means to learn and develop lifelong learning skills.

Professional Development Trainers

Do not over-train teachers. Even those who are anxious about technology can figure out the online teaching with some initial guidance. Some of the most effective professional development involves helping teachers leverage already effective lesson plans, learning strategies, and teaching materials and using the LMS and blended format to streamline instruction and incorporating 21st century learning skills. Rather than focusing on a new way of teaching, teachers can work together or with an instructional technologist to enhance what they already do well and use the technology to allow them more time to perform more of these proven practices. Teachers do, however, need ongoing technology advice because no one person can learn or remember everything that can be done with the vast array of technology tools that are available.

Content Providers

Most students and teachers indicated that they still want a printed textbook. Thesys started with an integration of textbook and technology so that everyone has a higher comfort level at the beginning.

Technology Purchasers

If students are using their computers at home or bringing them to school, there is less need for a school to provide personal computers and less need for technology classes.

System requirements for the technology in a blended course are well known and standardized; however, it is best to use the latest versions of browsers, java, etc.

Goals

Thesys and FPA have developed seventeen College Prep courses in Math, Science, English, and Social Science (UC-approved in CA), as well as ten AP courses and a set of English as a Primary Language courses. What goals are next?

1. Ongoing digital curriculum development to the existing courses, based on a continuous improvement process.
    - Upgrades for advisory board, student, and teacher feedback
    - More interactivity and student-created content
    - Consistency of look/feel/navigation across courses
    - Improve definition of goals and rubrics
    - Video and checklist for student goals to succeed
    - Add eBooks as an option
    - Teacher resources for customization
    - More use of Digital Literacies, as defined by students
    - Add more "global ethos" to courses to aid the development of 21st century skills
        - Different viewpoints
        - How the world functions in other regions
        - Global projects (with someone in another part of the world)
    - More frequent, smaller assessment tools within courses for teachers to determine what the student knows (focus on spelling, vocabulary, and reading comprehension)
2. Conduct pilot programs in under-achieving schools and higher achieving schools (public, private, and charter).
3. Ongoing development of English as a Primary Language courses to be used in China and elsewhere, including an online assessment tool.
4. Complete use of AP courses in three Chinese schools during the 2011–2012 academic year and conduct one AP course with students from China and the United States online at the same time (shared projects, discussion boards, wikis, etc.).

About the Author

Alan Rudi, Principal Solutions Strategist

With prior companies, Alan led teams that won awards for innovation. With over 20 years of experience in education business management and information services product marketing, Alan joined Fairmont Education Group in January 2009. Prior to launching Thesys in 2010, he developed and implemented an eLearning strategy for Fairmont Private Schools that included a core-out strategy focused on teacher training, technology application, and implementation over installation. Alan holds a Master's degree in Technology Management from Pepperdine University and a Master's degree in Business Administration from Oregon State University. He is passionate about the potential value of technology in education and the social need to continually improve education for all students in a global society. Prior to Fairmont, Alan developed new products and managed databases on 180 million consumers and 25 million businesses for use in the financial services industry. He was also responsible for turning a private university around to achieve an annual growth of 14%. As part of his tenure, he also developed eLearning programs and taught in both the classroom and online environments.

CHAPTER

9

Jumping in with Both Feet: A Move toward Blended Learning while Refining the Vision

Sarah Quilici, Ph.D., former Assistant Principal of Bishop Kelly High School

Bishop Kelly High School moved to a "Rotation Model" (Staker and Horn, 2012) model of blended learning in 2008, delivered through the Blackboard Learning Management System. The transition began with a year of professional development for teachers, after which all students were brought into the system. Teachers developed their own content for all of their classes, and school leaders guided from the side. This approach improved communication within the school community, but it did not necessarily enhance education. More training, more time, and a larger vision of blended learning were needed to progress from using Blackboard as a content repository to a tool for learning.

Introduction

Four years prior to the state of Idaho's "Students Come First Plan," Bishop Kelly High School was on its way to exploring opportunities for students through the use of technology in the classroom. Over the past year, the state of Idaho has been in the news regarding the "Students Come First Plan." Tom Luna, Idaho's Superintendent of Public Instruction, presented the plan in 2011 to **"**establish a one-to-one computer ratio in high school, give teachers classroom tools, provide teacher training, unfreeze the salary grid, raise minimum teacher pay, implement pay-for-performance, and fund dual credit" (Idaho State Department of Education, 2012). Part of Luna's plan required that students take some online or blended courses as a graduation requirement. As a private institution, Bishop Kelly High School has researched and implemented blended learning in order to promote excellence in education through technology. As the state of Idaho explores options and moves forward, Bishop Kelly High School is refining their program using best practices regarding technology in education.

Context

Bishop Kelly High School is a private Catholic high school in Boise, Idaho, serving students in grades 9 through 12. Established in 1964, Bishop Kelly is part of the Roman Catholic Diocese of Boise, and it is the only Catholic high school in the state of Idaho. In 2006, enrollment was 675; due to the economic downturn, enrollment dropped to approximately 635 for the next four school years. For the 2011–2012 school year, Bishop Kelly experienced a 9% increase in students to approximately 680.

Students come from throughout the greater Boise area to attend Bishop Kelly High School, and there are five Catholic elementary schools in the area that Bishop Kelly serves. Eighty-four percent of Bishop Kelly students are Catholic. Seventy-eight percent of students are white, 8% Latino, and 6% Asian. The tuition for the 2011–2012 school year was $6,890 + fees. Tuition assistance was given to 81% of students to make the school accessible to a wider population.

Of the 42 faculty members in 2010–2011, 22 held advanced degrees. As a private school, Bishop Kelly does not have to conform to state standards, which means that students do not have to take the Idaho Standard Achievement Test (ISAT), and teachers do not have to meet the requirements to be "highly qualified." However, Bishop Kelly is accredited by the National Catholic Education Association, Northwest Association of Accredited Schools, and Western Catholic Education Association. One of the expectations of these bodies is that teachers are teaching in the area of their certification. Several of the teachers came to Bishop Kelly from an industry other than education, and they are able to share that practical experience with students.

In 2005, Bishop Kelly launched its first Strategic Plan 2005–2010, which included researching and developing technology as part of the educational plan. Several alumni, students, parents, teachers, and community leaders were interviewed during the development of

the Strategic Plan. All of the goals, including the technology component, were developed through team effort. The Strategic Plan was updated in 2010, and one of the strategies was to "review, analyze, and respond to input on technology and its role in maximizing student learning." Exploring blended learning opportunities was included in this strategy.

As part of the first Strategic Plan (2005–2010), Bishop Kelly became a wireless campus in 2008. Six mobile laptop carts, with 15 computers each, were added for teachers to reserve in order to work on computers in their own classrooms. The school also has two computer labs and a library with 14 desktop computers. Projectors were added to almost every classroom, and many of the classrooms received interactive white boards.

Bishop Kelly's mission is to "educate and develop the whole student in the Catholic tradition—Spirit, Mind, and Body." Bishop Kelly also has a "Vision of the Graduate at Graduation," and one of the goals is "a firm grasp of technology and its role in maximizing learning." Blended learning was proposed to further this mission and vision.

Since Bishop Kelly is not attached to a school district, the school is able to make changes at a building level. The move to blended learning in 2007 was made at a time when the state of the economy was forcing many Catholic schools across the country to close their doors. Bishop Kelly made this investment of time and money in order to further distinguish the school as a thriving academic institution. The move was made to ensure that the instruction at Bishop Kelly was in line with best educational practices in the 21st century.

The administrative structure at Bishop Kelly supported the move toward blended learning. Bishop Kelly High School has a President/Principal model of leadership. The president is responsible for external affairs (fundraising, community relations, and budgeting), and the principal is responsible for internal affairs (supervision of teachers, curriculum, and instruction, etc.). There are also two assistant principals who are responsible for working with teachers and students.

Bishop Kelly has a Board of Governance that makes decisions on behalf of the school. The Board has several subcommittees that meet monthly and make recommendations to the Board. One of the subcommittees is a Technology Committee, comprised of one Board member, the principal, an assistant principal, five teachers, three parents who are also technology leaders in the community, and a Diocesan technology representative. The Technology Committee researched blended learning and the costs and benefits associated with a move of this nature. They recommended a move to blended learning in 2007, and the Board approved it.

Once blended learning was approved by the Board, one of the assistant principal's primary duties became the set-up and maintenance of blended learning. The assistant principal completed Blackboard's graphical user interface (GUI) training and handled the training, technology support, and content support for blended learning at the school. The other administrators championed the effort but were not as involved in the move toward blended learning.

Overview

Bishop Kelly is on a traditional seven periods a day schedule. At this point, blended learning has not reduced the amount of face time students spend in the classroom; students still attend class seven periods a day, five days a week. Bishop Kelly is an emerging version of Staker and Horn's (2012) rotation model—"a program in which within a given course or subject (e.g. math), students rotate . . . between learning modalities, at least one of which is online learning" (p. 8). Instead of a schedule change, a paradigm shift about how learning can be enhanced with online tools is occurring.

In 2007–2008, the Technology Committee committed to blended learning, and they began to research the appropriate tool to best fit the needs of Bishop Kelly High School. At the time, Bishop Kelly did not have full-time technology support at the school and, for that reason, Blackboard was determined to be the appropriate Learning Management System (LMS) because Blackboard could host, and there was less maintenance and set-up required. Moodle was considered, but the concern was the level of technology support required.

The concept of blended learning was introduced to the faculty during this year of research and discernment. One of the assistant principals gave a presentation to the faculty about the concept of blended learning. The concept conveyed ways to make learning more engaging for students by getting them to interact instead of sitting in a classroom listening to a lecture and taking notes.

The following were the goals for implementing blended learning at Bishop Kelly High School. The goals came out of the Strategic Plan, as well as practical needs realized each school day.

- To have a school-wide resource for announcements, class activities, etc.
- To close the gap between the way students are living and learning (21st century)
- To make classroom resources more accessible and efficient
- To increase communication between teacher and student
- To differentiate instruction (individualizing education—best practices)
- To make learning fun
- To improve communication with parents
- To assist students with special needs
- To not require that students "power down" as part of school—connecting to their multitasking skills
- To prepare students for college
- To make learning collaborative: not just teacher-to-student, but also student-to-student and student-to-teacher

Because it is the future of education—research shows that *effective* blended classrooms are more successful than those that are solely online or solely face-to-face (United States Department of Education, 2010).

One of the goals for blended learning was to help students be prepared for college. Ninety-eight percent of Bishop Kelly graduates go on to pursue post-secondary education; many recent graduates spoke about encountering Blackboard at their college or university or having to take an online introductory course in college. A move to blended learning could assist students with the transition process from high school to college.

Another goal was to bring learning closer to the 21st century digital age in which the students were living. Students are into social networking, using mobile devices, etc., and these should be incorporated into, rather than isolated from, the school day (Clark, Logan, Luckin, Mee, & Oliver, 2009). Overall, the school chose to move toward blended learning in order to improve teaching and learning.

One of the keys to improved teaching and learning was the opportunity that blended learning provides to differentiate instruction. Teachers can set up modules for students who need remediation or who need extensions in order to further their already advanced learning. One example of what blended learning could provide came from a geometry student who made the comment that his current grade was low because he did not understand the last geometry concept. He stated that his grade would improve now because the class had moved on to other geometry topics. The issue with this student's thinking is that math is a sequential subject; he will likely need this concept later in geometry and possibly in algebra 2 and further math courses. Blended learning can provide an opportunity for this student to go back and learn that concept from a different approach (maybe through simulation or a YouTube video) and therefore not have a gap in his geometry understanding. Meanwhile, the teacher can continue to advance in the face-to-face geometry class with the other students who have already mastered the concept.

Another opportunity that blended learning provides is some flexibility in scheduling. Bishop Kelly is a small high school that offers a large high school curriculum. Rather than offering one section of Advanced Placement (AP) Economics and one section of AP Calculus and trying to match students' schedules to fit these offerings, AP curriculum for the classes could be provided online. For example, students would register for an economics class, and then they would decide if they wanted the AP designation on the class. If students did desire the AP designation, the additional requirements could be an online component to the class.

In 2008–2009, Bishop Kelly adopted Blackboard LMS. Blackboard had a School Central program that provided hosting for the school and included two training seats for school administrators to learn the program. During that first year, all faculty members were given Blackboard accounts, and the school provided several days of release time to train the faculty on how to set up their classes in Blackboard. The idea behind having all faculty enrolled in Blackboard during the training was to give them access to the actual pages they would be using for blended learning and to allow them to develop those pages during the training—practical vs. theoretical knowledge. A "train the trainer" approach

was employed during this first year. One of the assistant principals completed the training provided by Blackboard and then taught the faculty. The training was focused on how to use Blackboard, not on how to effectively use blended learning to improve student learning.

Teachers were given a rubric that was adapted from Alexandria City Public Schools' Expectations (2008) (Figure 9-1). The rubric was intended to help teachers better understand the expectations for Blackboard use in their classrooms. Alexandria City Public Schools' Expectations were chosen as a template because it had been in practice in another system attempting blended learning, and it emphasized that blended learning was going to look different in each teacher's classroom, but they should be trying different things to see what fits with their style. The rubric was chosen without teacher input.

During the 2010-11 school year, teachers should be functioning at Level II utilizing a minimum of 2-3 tools per week in their classes on Blackboard. Teachers who meet Level III criteria will exceed expectations for this year.

Level I	Minimum expectation for all courses and sections: • Make all courses available to students • Class announcements • Class syllabus posted • Course documents posted
Level II	Enroll student into your courses Regularly (each week) use 2-3 of the following: • Announcements about assignments or special events • Test, quiz, project dates posted in either the Calendar or another course menu item • Glossary with terms from current unit or entire course • Discussion board forum set up as an assignment • Use group tools • Use communication tools (email, etc.) • External links to useful websites with description of these websites • Digital files of standard course assignments (essay rubrics, lab format, current events assignment, safety requirements, etc.) • Using blogs and wikis in the classroom to deepen student understanding of course material
Level III	• Online assessments for either practice or evaluation • Posts assignments using the Blackboard forum (students use Bb to access and complete classroom assignments) • Several kinds of files posted in Blackboard (excel, inspiration, pdf, html, jpg, gif, ppt) • Virtual classroom • Helps colleagues implement Blackboard
Level IV	• Differentiate instruction with Adaptive Release and other tools • Incorporate podcasting and other web 2.0 tools into instruction • Develop hybrid and online courses

Matrix was adapted from Alexandria City Public Schools: http://www.acps.k12.va.us/blackboard/teacher-expectations-bs.pdf

Figure 9-1 Blackboard Expectations for Bishop Kelly High School Teachers

Teachers were apprehensive the first year. The primary concerns were: the time required to set up the content for their online classes; doubling students' workload because they would be doing online and face-to-face classroom components; the relevance of technology to a system that was already working well; and the money spent on the LMS. Even though teachers had access to the system, they were not accessing it much, outside of training time, because they were not using it in their classrooms. The focus of the training was more on how to use Blackboard than on blended learning and the theory behind it, so many teachers did not understand how it would fit into their teaching style. Math and science teachers were especially concerned about how blended learning could work with their content, which was not discussion or literature based.

During the 2008–2009 school year, there were three early adopters who were eager to begin using Blackboard in their classrooms. These three teachers also taught online for Idaho Digital Learning Academy (IDLA), and they were very familiar with Blackboard and online resources. In the spring of 2009, these three teachers began to experiment with

blended learning in their classrooms. One history class started to use the discussion board; students had to respond to the discussion board before they came to class, and then the class would have a live discussion the next day. The teacher found that more students participated in the classroom because of the initial thought they put into their online discussion. An economics teacher had her students post current events. Now, instead of students submitting their assignments to the teacher and receiving only her feedback, the students had the whole class as an audience, and they were learning from each other.

Students were grouped by teacher and class title instead of by class period. For example, all students taking macroeconomics in spring of 2009 were in one Blackboard section together, regardless of which period they were taking the class. This dissolved the rigid lines of class periods, and students were able to interact with other students in the school who were not in their physical classroom. Students are still grouped this way, as it is one way for blended learning to remove some boundaries of space and time.

Students were not given Blackboard training during the 2008–2009 school year. The only student exposure was in the early adopters' classrooms. These early adopters (both teachers and students) helped create some enthusiasm for blended learning. Students who were not currently using the system were asking about it, and the teachers who were using it were able to share their experiences with other faculty members, which helped to get them interested in using it in their classrooms.

If teachers had questions about blended learning, the assistant principal working on Blackboard management was the primary resource. The assistant principal had experience using Blackboard as a student and a teacher. When a question arose, the assistant principal often had to troubleshoot through a problem or contact Blackboard's support team. The early adopters in the school were able to answer some teacher questions as well.

It was also important to have parents understand what blended learning was and why Bishop Kelly was making this investment. Letters were sent to parents during the 2008–2009 school year to help parents understand and begin to get excited about the coming change. Blended learning was also discussed at gatherings where parents were present in order to build up an atmosphere of support. Parents became excited about the opportunity because of the implications blended learning had for college preparation.

In 2009–2010, all four grade levels of students were put into the Blackboard system. All freshman parents were given access as "observers," connected to their students, and other parents could request access through the assistant principal. Once parents were given access to the system, they were able to view all of their students' classes. Teachers retained the right to enable and disable the materials parents could see. The Blackboard system default did not allow parents to view discussion boards or assignments. Blackboard training was provided for students at an orientation day at the beginning of the year, and optional trainings were offered for parents.

For the 2009–2010 school year, teachers were expected to meet Level II on the rubric for all classes they were teaching. Teachers were expected to enroll students into their own classes. Teachers were also given a lot of freedom in how they named and arranged their buttons and content in their classes.

Bishop Kelly upgraded to Blackboard Release 9, which was significantly different from version 8 for which teachers were trained. Release 9 was designed to make class set-up easier for teachers, but there was a learning curve as well. No release time was provided for teachers to develop their courses, as the school was also going through an accreditation, and the accreditation process did not allow time for training. Even though there was a rubric of expectations for teachers in place, teachers were not evaluated for the online components of their courses.

Students, parents, and faculty were surveyed at the end of the first full year of blended learning, in April 2010. A random sample of 10% of students in each grade level was taken for the survey (N=64). All faculty were provided with the survey, and 31 faculty members (74%) completed the survey. Parents were sent a link to the survey via email; 64 parents completed the survey—most of those parents had 9th grade students at Bishop Kelly. Across the board, students, faculty, and parents said that blended learning needed to be consistently and efficiently employed. This data showed that more training would be required in order to have blended learning running effectively at Bishop Kelly.

Figure 9-2, taken from the survey, illustrates students' perspectives of the tools their teachers were most frequently using in their classes. Class documents had the greatest usage, followed by announcements and SafeAssignment, a building block for checking students' written assignments for plagiarism. These are tools that increase communication, but they do not necessarily increase collaboration and peer-to-peer learning and engagement.

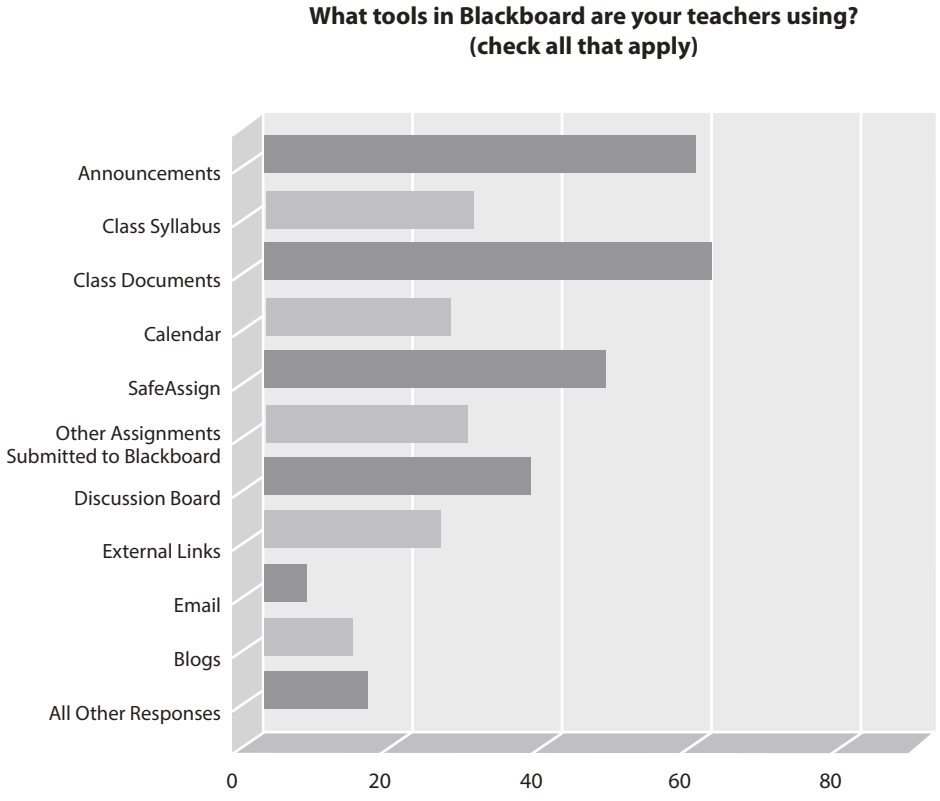

Figure 9-2 Students' Perspectives of Tools They Were Encountering in Class (created by SurveyMonkey)

Figure 9-3 illustrates the reasons teachers used Blackboard for blended learning. The primary reason was increased communication, but the secondary reason was because it was mandated. Only 16.1% (N=5) of teachers said that it "facilitated student learning."

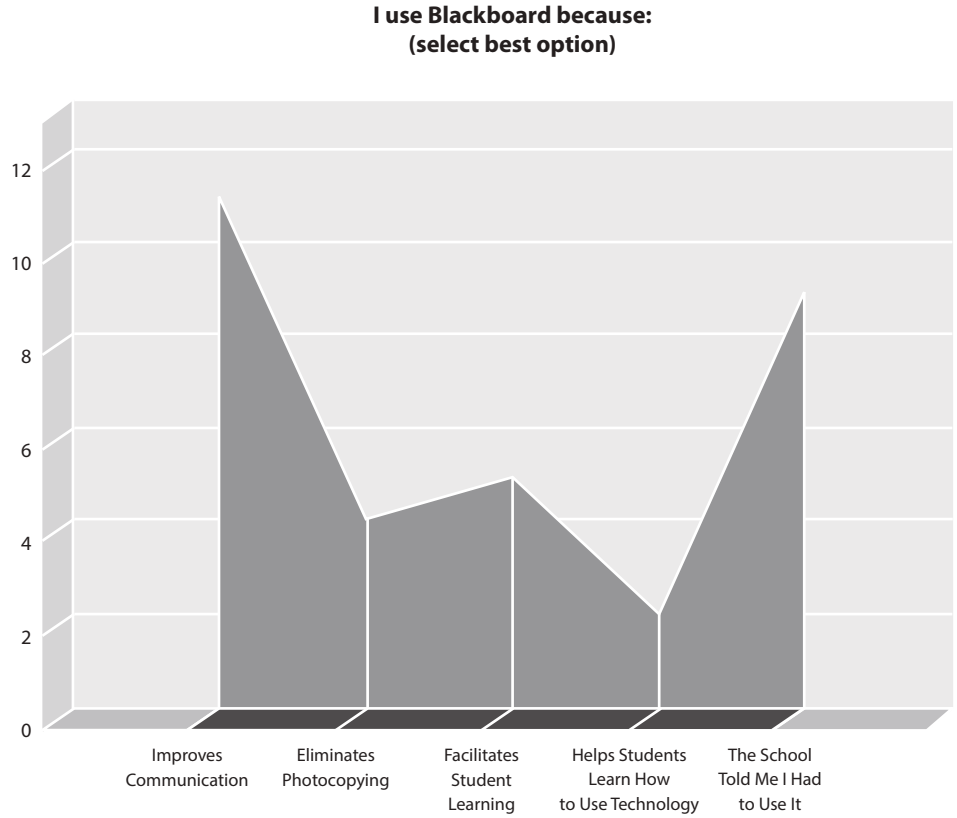

Figure 9-3 Teacher Usage (created by SurveyMonkey)

Table 9-1 represents results from the survey that was conducted in April of 2010 regarding Blackboard usage.

Table 9-1 Student, Parent, and Teacher Beliefs about Blackboard

Student, Parent, and Teacher Beliefs about Blackboard			
Statement	**Students**	**Parents**	**Teachers**
"I believe Blackboard adds to my learning experience at Bishop Kelly and prepares me for the future."	56.2% (N=31)		
"I believe Blackboard adds to my student's learning experience at Bishop Kelly and prepares my student for the future."		82.5% (N=47)	
"Blackboard provided tools and features that were genuinely helpful for my teaching."			70% (N=21)
"I believe Blackboard is, or will become, a valuable contributor to a stronger Bishop Kelly education."	57.8% (N=37)	85.7% (N=48)	66.7% (N=20)

In 2010–2011 another grade level of parents were added to Bishop Kelly High School's Blackboard LMS so that they could observe their students' classes. Before school started, a trainer from Blackboard came in to provide workshops for the teachers regarding how to navigate Blackboard. The workshops were arranged at various levels so those who were beginners had options, as well as those who were advanced. The trainer was able to identify two areas where Bishop Kelly was struggling and provided useful suggestions for resolving those issues. One of the main contentions of teachers was enrolling their own students in classes. Another issue was lack of time to develop online content. The trainer showed the assistant principal how to batch enroll students into teachers' classrooms.

While student training was provided to new students at an orientation before school started, training was coming much more in the classrooms from the teachers, who explained how and why they used Blackboard specific to their class. Students appreciated individual teacher training because each teacher was unique in how they arranged and integrated blended learning into their classes.

The Bishop Kelly principal and assistant principals began to perform "virtual walkthroughs" of teachers' online classrooms once a quarter to provide feedback to the teachers about their courses and other things they could try. The walkthroughs were based on the rubric of expectations. The rubric remained unchanged from its introduction, and teachers were still only required to meet Level II expectations. Administrators used a checklist of which tools teachers were using, and then they made suggestions for improvement in each online classroom.

The burden of developing content was placed solely on the teachers; the rationale behind this was that the teachers, who to some extent develop their own curriculum, would have the freedom to use blended learning as it best fit their needs. Bishop Kelly did not purchase content from an external source, nor was there a person on staff to direct faculty to resources that might be beneficial. Since teaching already requires so much time from faculty, developing online content was not given high priority, especially since there was no release time provided. Two of the history classes were using online textbooks, and other textbooks came with course cartridges of materials for Blackboard. Outside of these resources, the content that teachers used was their own or from resources they discovered on their own.

The teachers all organized their content in very different ways, and students, who each have seven teachers, were often confused about where to find materials. A few teachers within departments who were teaching the same courses copied their Blackboard class and therefore had similar layouts, but many of the teachers in the school were the only person teaching their subject/class.

Bishop Kelly implemented Professional Learning Communities (PLCs) in 2008, based on Richard DuFour's (DuFour, Eaker, & DuFour, 2008) four questions to encourage professional

dialogue. At the beginning, PLCs were organized by department (or content area); during the 2010–2011 school year, PLCs were developed around teacher issues. Teachers brainstormed the issues, and they ranked which PLCs they preferred. The PLC time was more teacher-led professional development, based on their needs in the classroom. The PLCs created goals, worked on those goals, and shared the goals with the faculty at the end of each semester.

One hour of release time was provided each month for the PLCs to work together. One PLC was designated to look at making blended learning effective in the school. The fact that there was a PLC built around the issue of Blackboard/blended learning shows that teachers wanted to take ownership of blended learning and work through some issues. The PLC decided to address course organization as the first issue because they were encountering problems in their classes with this issue. The group asked for screenshots of all teachers' Blackboard classrooms, and then they compiled a suggested list of which buttons should be standard in the classes. The teachers still have the option of choosing how to set up their classes, but this template was presented as a guide to help standardize the layout. The PLC came up with the following suggestions for the Blackboard template, based on information provided by the teachers about their individual Blackboard setups.

- ALL courses would open with a homepage to include announcements but could also include a calendar, task list, homework, etc.
- There would be four standard buttons: Homepage, Class Outline, Course Units, and Discussion Board.
- Class Outline would contain: Syllabus, Scope and Sequence, and Personal Contact Information.
- Course Units would contain: Assignments, Notes, PowerPoints, Study Guides, Discussion Board Link, and links to other tabs used in the course.
- Additional tabs may be added by teachers; it is suggested that links within the individual course units could also be used to access these tabs (journals, grades, etc.).

After the first training year, two professional development classes on Blackboard usage and blended learning theories were offered to teachers for graduate college credit. Teachers who wanted to learn more about either topic, or if they needed credits to recertify, could opt to enroll in the classes. The assistant principal taught the classes, and credit was granted through a local university. Eight teachers enrolled in each class. The focus of the first class was primarily on how to use Blackboard, and the focus of the second class was on blended learning and its potential to impact classroom instruction for the better. Teachers in the second class explored Web 2.0 tools and other resources to strengthen the blended learning in the classroom.

Results

On the positive side, some Bishop Kelly students have commented that using Blackboard in high school helped to better prepare them for college because they knew the system prior to being required to use it in college. Students were able to stay involved in their classes at Bishop Kelly, even when they were on the road for athletic competitions or family travels. One Bishop Kelly teacher used Wimba to interact live with his classes while he was at a professional development conference in Chicago. Blended learning removes some of the boundaries in education.

Blended learning has enhanced the classroom teachers' creativity. In one English class, students created digital scrapbooks instead of taking a paper and pen semester final. This open-ended project promoted higher-level thinking, and students were able to share their learning with the other students in the class, rather than just receiving a grade from the teacher for the assignment.

Blended learning has opened the door for varied learning. Not all students are able to listen to a lecture, take notes, and draw conclusions about the lecture. However, links to Hippocampus and YouTube videos may help reinforce what teachers are doing in their classrooms and give students a different way to learn.

Blended learning has increased communication between teachers and students and between teachers and parents. Assignments and classroom materials are reinforced by the materials in Blackboard.

Teachers' skills surrounding blended learning and Blackboard use increased significantly, especially after a trainer from Blackboard was brought in. While most of the funding for Bishop Kelly's blended program has come from the school, an infusion of Title II professional development funds helped make the training possible. Table 9-2 illustrates teachers' proficiency based on the Expectation rubric in April 2010 and April 2011. There was significant growth during the 2010–2011 school year; the trainer from Blackboard contributed to this. Administrative walkthroughs of the online classrooms and support for the efforts teachers were making toward blended learning may have contributed to this growth as well.

Table 9-2 Faculty Blackboard Proficiency

Faculty Blackboard Proficiency				
	No Proficiency	**Level I**	**Level II**	**Level III**
AY 2009/2010	11	18	7	6
AY 2010/2011	4	4	28	6

During the last legislative session in Idaho, Tom Luna, State Superintendent of Public Instruction, called for an increase in online and blended learning. As Idaho districts

begin to formulate plans to address this demand, Bishop Kelly is ahead of the curve, already working on blended learning and exploring possible ways to improve that learning. The community is interested in what Bishop Kelly has been doing.

On the negative side, students have to learn the routines of seven different teachers in two places. Having an online component to the class means that students not only have to learn the routine of the teacher in the physical classroom—such as where to hand in their homework and what to do about late work—but students also have to know what teachers supply online and what their expectations are. This is where the standardization in how teachers lay out their online classrooms may be helpful, and teachers need to spend classroom time to teach their students how to approach the online component of their class.

Another struggle has been finding a balance. Bishop Kelly is known for high-quality teaching, and families do not want students to lose face-to-face contact with teachers. The online component of the class needs to be engaging and provoke higher-level thinking, but families do not want computers to replace teachers' presence. However, the school experienced an increase in enrollment for 2011–2012. While this increase cannot be directly attributed to blended learning, parents expressed a high level of interest at the blended learning stop at Information Night in February.

Implications

Bishop Kelly High School moved forward with blended learning, working from a conceptual idea of where that could take the school. As with any transition process, there were gains and losses along the way. However, the important thing is that Bishop Kelly moved ahead with the idea and continues to develop the best fit for the school.

School leader-based best practices

One assistant principal at Bishop Kelly was assigned to work with teachers, students, and parents on blended learning. The role of the other school leaders was to promote and encourage blended learning; they guided more from the side and were not as involved. During the 2010–2011 school year, the other administrators became a little more involved as they started to evaluate the online aspects of courses according to the rubric. These best practices are lessons learned from this approach to leading blended learning.

- School leaders should be role models for blended learning. They should go through training, lead the initiative, and support the initiative throughout. This active engagement shows the faculty that blended learning is important and has practical uses.

- One way school leaders can be models for the faculty is to use blended learning as part of professional development. Bishop Kelly gave a faculty "class" in Blackboard. Departments and PLCs have established groups in the "class." This can be a good place for faculty-wide announcements, discussions, agendas, resources, etc. Bishop Kelly had a faculty book discussion in the "class." The two professional development classes offered to the faculty were blended, so that the teachers enrolled in the courses got the student experience. Other blended or online classes could be offered for professional development.
- Through using blended learning in this way, leaders challenge faculty to use new resources and try new things.
- School leaders cannot sit back and let blended learning run. Leaders need to be active and have fun with blended learning. It needs to be a team approach—the whole school is in this together, learning and making the school the best that it can be.

Teacher-based best practices

- In order for blended learning to be successful, the teachers need to believe in the idea. Teachers are on the forefront in working with students, and their attitudes shape students' attitudes. If teachers complain about having to incorporate technology, students will complain and think that it is unfair and unnecessary. Teachers need to understand the long-range vision for what blended learning can be and do in the school. There are teachers on the Technology Committee and teachers involved in the Strategic Planning process, but teachers need to be part of the ongoing development of a blended program. They should have been involved in the development of the rubric and other aspects of the vision for blended learning because they are such an integral part of the success of blended learning.
- Professional development is important. Individual teacher training had the most profound effect. After visiting a classroom or after a teacher evaluation, specific recommendations to that teacher about what could be enhanced through technology were more helpful than a punitive rubric or generic ideas presented to the entire group. The teachers at Bishop Kelly have requested content-specific training; it is even better when an administrator, or someone else in the school, can provide teacher-specific training. It was beneficial to have an outside trainer come in to share ideas with the faculty. The outside trainer offered a new perspective and a new approach to presenting material to the faculty.
- In order for teachers to fully support blended learning, they need to have their workload reduced in order to have more time to think through and plan how blended learning can be most effective in their classroom. When the outside trainer came in, he recommended a process for the assistant principal to enroll students into teachers' classes. He suggested that the enrollment and management of students in the classes was causing the teachers a bit of anxiety. Taking this one assignment out of teachers' hands would free them up to set up their class materials in a more effective manner.

- Another balance is the tool (Blackboard) versus the teaching. The focus of schools is teaching and learning. Blackboard and Web 2.0 tools should be used in the pursuit of teaching and learning, not just to be used. Since there was a rubric of expectations for teachers, many teachers began to use Blackboard as a content repository, to post their handouts, etc., rather than a place for learning. Learning has to be the primary focus.

Student-based best practices

- Students, like teachers, can view blended learning as "one more thing to do" when it is not effectively integrated into the class. Instead of drawing on students' technological skills and teaching them 21st century skills, blended learning can isolate them unless they understand the purpose and can be involved in designing the program. Students can be a useful resource to the development and implementation of blended learning; in many cases, students have an even greater knowledge of effective learning resources on the Internet.

- Students need a clear understanding of what blended learning is and how the school is going to use it. It is also important that each teacher provide students with an overview of what blended learning will look like for their specific class. It is important to keep material organized in a way that is intuitive for students so that they are able to make the most of it.

- Blended learning should be used to help students, not just to put materials online. Blackboard has an Adaptive Release feature that can set up designated students to receive selected materials. For example, there are some students with special needs who require notes in advance of a lecture in order to better absorb the materials. Adaptive Release has the potential to make these notes available to the selected students, rather than the whole class. This saves those students the embarrassment of being handed a paper copy of the notes in front of the class. It also places the onus on the student to go online and retrieve the notes, rather than the teacher having to remember who needs access to this resource.

Content-based best practices

- Technology is a tool to support instruction, not to teach the lesson. The learning objectives need to come first, and then the appropriate technology can help students achieve those goals. The technology used should be whatever best fits the lesson, not simply limited to the tools an LMS can provide. In order to truly achieve this, a school needs personnel that are immersed in Web 2.0 tools and can guide teachers to new, creative tools to use for their classrooms. These support personnel could make recommendations to teachers, based on their learning goals, for which technology

tools would be the most appropriate. Teachers should also have some release time to learn how to use new tools and how to integrate them in their classrooms. It is also important for teachers to teach new tools to students so they are able to use them in the classroom. Students do not necessarily know how to use technology for academic purposes, even though they are using it outside the classroom (Luckin et al., 2009).

- Blackboard is one tool; there are many other Web 2.0 tools out there that can have power in the class. Teachers need training on the theory and intention behind blended learning so they will understand how to pull together different resources to best create a lesson. Early on at Bishop Kelly too much emphasis was placed on Blackboard and more emphasis should have been placed on blended learning.
- Blended learning is so much more than putting face-to-face content online. It is important that all stakeholders understand this and are able to make a paradigm shift.

Technology-based best practices

- Supporting and maintaining a blended learning program requires a lot of time. Not only must users be put into the system, but users have questions and need help utilizing the system. This can be quite time-consuming, especially at the start of a school year. It is important to have technology support available in the school to assist students, teachers, and parents with their questions and problems.
- If full-time technology support is not available, teachers can go to each other for assistance. The Bishop Kelly Faculty Handbook included a list of teachers, by location in the school, who could help other teachers in their vicinity. This list could also be organized by blended learning content specialists in the school.

Future Plans for Blended Learning

In March 2012, Bishop Kelly opened a new administrative space with a Commons area for students to convene. Part of the Commons is a room that is wired for all types of technology. In spring of 2012, Bishop Kelly utilized the new room for virtual fieldtrips and faculty training, and as a digital meeting space.

Bishop Kelly also connected to the Idaho Education Network (IEN) through this room. The IEN is a statewide broadband network established by the Department of Administration to improve access, especially in the most rural areas of the state. The IEN was designed with videoconferencing as the basis and the goal of connecting institutions in order to save money and create opportunity. Through the IEN, students in rural areas are able to take a foreign language or AP class that was not offered at their school due to limited staffing. Right now the IEN is a resource for faculty training at Bishop Kelly High School, but Bishop Kelly may offer some classes for students through the IEN as early as spring 2013.

Bishop Kelly is also rolling out a one-to-one laptop program. This would allow classes to be more fully blended as technology could be brought into the classroom at any point of any class. Bishop Kelly purchased 150 notebooks for the 2012–2013 school year that will be deployed to the faculty and used to replace and update the laptops on the mobile carts. Staff development will be conducted to prepare teachers for all students to have laptops during the 2013–2014 school year. In preparation for a one-to-one situation, Bishop Kelly had an analysis conducted on the wireless infrastructure and is adding wireless access points and routers to make the entire campus wireless.

During the 2011–2012 school year, Bishop Kelly hosted Blackboard on its own. Blackboard dissolved the School Central program, which was a managed hosting program that Bishop Kelly was part of, and it was more cost effective for Bishop Kelly to host. Bishop Kelly has two full-time technology support personnel that are able to assist with this hosting. Hosting Blackboard produced better results for Bishop Kelly because it improved response time. Bishop Kelly is exploring extensions offered through the Blackboard LMS, such as Mobile and Community.

Bishop Kelly hired a Media/Library Specialist for the 2012–2013 school year. This position was created with the intention of providing a resource for teachers for adding technology into the classroom. The Media/Library Specialist will work with the administration and the teachers in creating excellence in teaching through the use of technology.

Bishop Kelly hopes to offer opportunities to their partner schools and the Diocese at large. It is possible for Bishop Kelly to offer Blackboard seats to elementary students, or to other people in the Diocese for training purposes. There is also the possibility of Bishop Kelly offering online classes to students in other areas of the state who are not able to physically attend school in Boise, but who want to take classes from the only Catholic high school in Idaho.

Another goal for blended learning is to connect to universities for resources and to further prepare students for their next step. Dialogue is occurring about the best way to exchange resources.

About the Author

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CHAPTER

10

Kentwood Public Schools

Dr. Scott Palczewski, Superintendent

Mr. Evan Hordyk, Executive Director of Secondary Education

Mr. John Keenoy, Principal, East Kentwood High School

Mr. David Emeott, Math Instructor, East Kentwood High School

Kentwood Public Schools, in southwestern Michigan, piloted a blended instruction model in the fall of 2010 for 100 geometry students. The pilot afforded students an alternative method for meeting new state graduation requirements; it also offered a field trial for teachers and administrators. In just one year, the program proved so effective that the district expanded it in additional grades and subjects in the fall of 2011. The lessons they learned are shared here.

Context

Kentwood Public Schools (KPS) in southwestern Michigan serves nearly 9,000 students throughout its K–12 system; 2,700 in its two high school buildings: East Kentwood High School (grades 10–12) and the EKHS Freshman Campus (grade 9). There are 114 teachers in the high school building, 79% of whom have a Master's or higher degree. Teachers average 11 years' experience. The high school is on a trimester schedule with courses averaging 28 students per section.

KPS's student population exemplifies diversity. In the 1980s, the district was approximately 96% Caucasian and 85% middle class; whereas today, 57% are people of color and 61% are low income. Approximately 40% of students of color are African American; the other 60% comprise 36 different ethnicities, including Asian, Latino, and numerous families who are recent immigrants or refugees. Children from many Bosnian, Sudanese, Nigerian, and Liberian families contribute to an increasing number of English Language Learner (ELL) students and to the 63 different languages and dialects spoken in the schools. This past school year, more than 1,100 students were from refugee/immigrant families and spoke little or no English in the home.

KPS students also exemplify resilience and excellence. Despite differences of culture and language, despite changing graduation requirements and standards for achievement, and despite decreasing revenues for their schools, Kentwood students continue to excel on standardized tests, continue to meet and exceed academic proficiency requirements for AYP, and continue to graduate prepared for the next stage of their lives. Ninety-five percent of KPS's students graduate; 87% graduate in four years, and almost 50% attend college or university.

As a district, KPS has based its responses to changing demographics, mandates, and funding levels on a core belief that every child *can* learn, and a core directive to provide students every possible opportunity to learn. Responses to problems reflect core values, such as building strong relationships between students, teachers, parents, and community members, and combining, wherever possible, innovative, high-tech teaching methods with personalized learning opportunities that empower students to "own" their education. KPS values and honors cultural and ethnic differences among students; district leaders recognize how greatly diversity contributes toward educating students to be competitive in a global economy.

The district's values and beliefs underlay a determination to be among the first districts in the state to develop and implement standards-based education. They were paramount in Kentwood's becoming a first-round grant-funded Safe Schools–Healthy Students project[1] and, for a decade following, in sustaining the outcomes of that project. The district's values have been key to successful collaborations with non-profit organizations, businesses, and local government to:

- develop award-winning after-school and summer enrichment programs;
- strengthen security and safety measures;

[1] Safe Schools–Healthy Students is a grant program offered by the Federal Departments of Justice, Education, and Health and Human Services. It was first offered in 1999.

- help students express themselves through dance, music, technology, and artwork;
- prepare new teachers;
- engage students in service learning; and
- ensure that students' health and security needs are met in their school.

KPS is a district in which books like Clayton Christensen's *Disrupting Class* and Alan Deutschman's *Change or Die* are required reading for all administrators, and where administrators and faculty innovate based on principles such as Christensen's "As you face budget crises . . . don't solve these problems by doing less . . . . solve it by facilitating disruption," (p. 227) and Willard Daggett's (2008) principle that the students should be doing the majority of the work instead of passively watching their teachers work.

KPS faculty and administrators believe that valuing and respecting students' sense of self, culture, and community positively affect student achievement. That value is evident in the "Capturing Kids' Hearts" initiative, an approach to education which holds that real learning begins with relationships. All KPS teachers have been trained to empower their students by listening with empathy, engaging them in decision making and, ultimately, motivating them to be responsible for their own actions, thoughts, and behaviors. Every day, every hour, *every child* is welcomed to the classroom with eye contact and a handshake from their teacher or other adult in the school. Every classroom and every school building has jointly developed "social contracts." Every child is held accountable to behave in a way that respects the terms of the contract he/she helped create. In the mandatory 6th and 9th grade "Teen Leadership" course that every student completes, students discuss behaviors, beliefs, responsibilities, and relationships. They are encouraged to share and self-disclose in an atmosphere of acceptance and care.

In large part because of KPS's core values, when the Michigan Department of Education (2011) recently conducted a study of schools that have "overcome the identifiable risk factors to low academic achievement, such as low economic status, [diverse] race and ethnicity, or [lack of] proficiency with the English language," four of KPS's schools were among 100 in the state said to have "beat the odds."

Overview

In 2006, the state notified all school districts in Michigan that, beginning with the class of 2011, all students would be required to pass not only Algebra I, but also Geometry and Algebra II, in order to graduate high school. Kentwood Public Schools moved up compliance by one year, requiring Geometry and Algebra II of all 2010 graduates. To ensure that they had sufficient time to complete the requirements, students were counseled to take Algebra I as Freshmen, Geometry as Sophomores, and Algebra II as Juniors. East Kentwood High School staff soon discovered, however, that too many Juniors and even some Seniors were stalled in their second-year math course. Approximately 35% of the Class of 2010 would fail to meet graduation requirements in mathematics.

Before 2009 ended, administrators and others met to analyze the problem and generate potential solutions. Everyone at the meeting agreed that the district must maintain high expectations for all students. They would not consider lowering standards for achievement in Geometry. They knew and fully expected that all students *could* learn, but could not deny that the most recent data were indicating that not all students did learn. The only direction they could take—the only one that met with the culture of Kentwood Public Schools—was to provide a new opportunity for students to achieve the standard in Geometry.

High school principal John Keenoy proposed online content delivery as an alternative approach. The district was already using e2020 successfully with students requiring credit recovery. The program provides students a varied approach to learning by using direct video instruction along with other hands-on activities. Students voluntarily enrolled in an after-school program that offered one teacher to every 30 students who attended. They worked at their own pace; those who attended and completed the course satisfactorily received the credit they needed to apply toward graduation requirements.

Keenoy was determined to explore the idea further. First, he spoke with students who had used the online content delivery program for credit recovery. He learned from them that they missed having a content expert on hand during lessons. They complained that science instruction, for instance, might be facilitated by a language arts teacher, and that they often found more help from their peers than from a teacher who was not an expert in content. Nonetheless, most liked the ability to go at their own pace. They liked that the program was always available to them. If they wanted to do their work at 3:00 in the morning they could, and they could repeat lessons as often as they needed in order to understand a concept. One student told Keenoy something hauntingly profound by saying, "I shouldn't have to fail the class to get the chance to learn my way the second time."

The more Keenoy thought about the students' comments, and the more he learned about blended instruction, the more he supported the approach. It fit in with the district's educational values and beliefs; it offered a different opportunity for students to learn. When Keenoy discussed the idea with math teacher David Emeott, the pilot blended instruction Geometry class was born.

Keenoy and Executive Director of Secondary Education, Evan Hordyk, explored various online delivery systems and concluded that the one they already used—e2020—fit their needs. It offered pre-tests, self-pacing, a minimum passing standard, access from outside the school building, and engaging "faced" instructors, rather than voice-over instruction. It was flexible, which enabled KPS to customize learning activities and key lessons to the standards.

On April 13, 2010, Keenoy sent a letter to the parents of 9th grade Algebra students, describing the potential benefits their teens might derive from participating in a blended instruction Geometry class that would pilot in 2010–2011. The letter promised a 16:1 student-to-educator ratio, an opportunity for students to progress at their own pace, and a means to focus on the individual student's specific areas of need. It also assured parents that the course would meet all standards for Geometry, that all blended education students would be required to take the same comprehensive final exam as students

in the traditional Geometry classes, and that, if the approach did not work for their teens, they could transfer into a traditional Geometry class in the second trimester.

The district recruited 100 students—focusing on students who had earned a B, C, or D grade in Algebra—to participate in the pilot blended instruction Geometry class that began in September 2010. Leaders determined that "A" students had already demonstrated success in traditional methods; participation by those with average grades was entirely voluntary. Emeott or Keenoy visited every section of Algebra I at the Freshman Campus to talk to the math teachers and students about the program. They held a parent night so parents could ask questions, and they continued recruitment efforts until the two pilot classes were filled with students interested in trying a new approach to learning Geometry.

Math teacher Emeott had not taught Geometry prior to the pilot blended learning program. He spent the summer months reviewing and testing his own knowledge of Geometry, completing the entire online Geometry course, refining the curriculum and schedule for the blended learning classroom, aligning learning outcomes to KPS's and state standards, and researching literature on the blended approach to instruction.

In the fall, the 100 students were organized into two groups of 50 students each. They met daily, Monday through Friday, over a 12-week trimester, for 72 minutes of blended Geometry instruction. The students had use of a two-room classroom. One room had 50 computers with Internet access and the Geometry online course; the other room had 30 desks and tables for hands-on activities. A half-wall of windows between the two rooms enabled constant visual supervision.

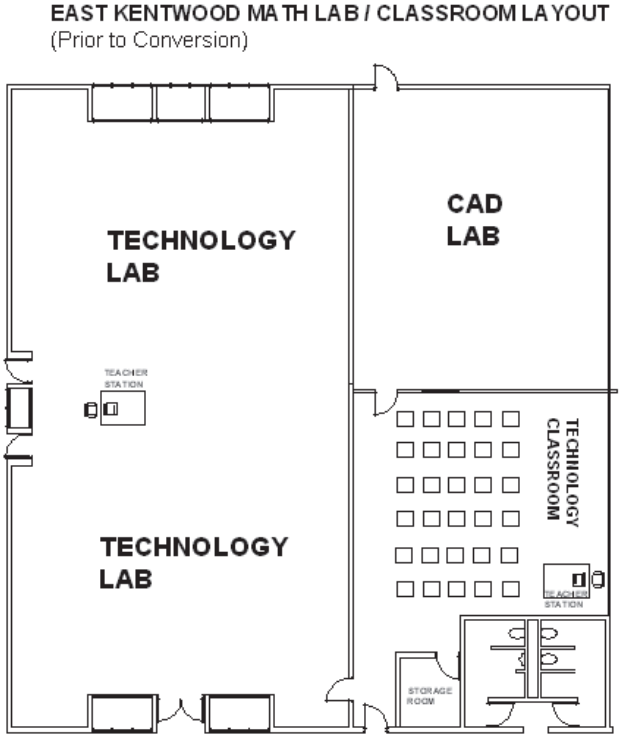

Figure 10-1 The former industrial technology classroom.

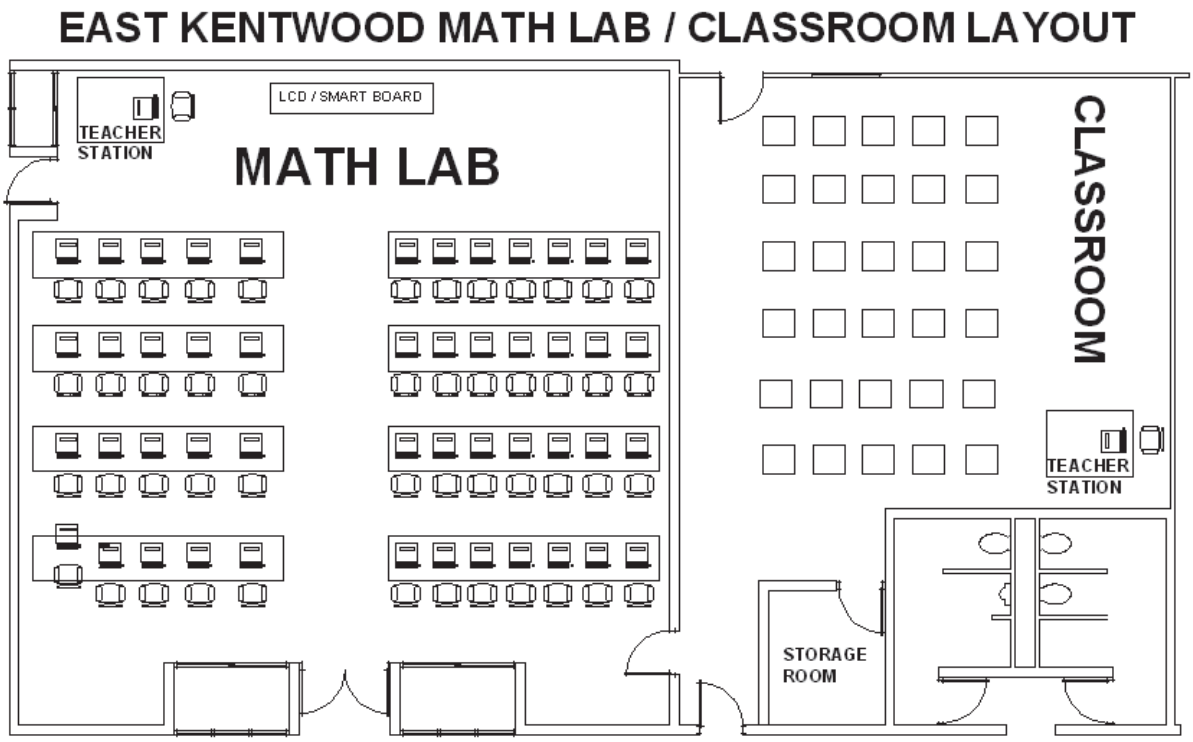

Figure 10-2 The pilot blended instruction Geometry class was held in what was formerly an industrial technology classroom, with electronics instruction in one room, a small CAD classroom on the other, and a door and windows between the two rooms. Emeott required a full-size classroom to teach his other math courses, so KPS expanded the CAD classroom, taking a portion of a small teachers' lounge. KPS equipped the former electronics classroom with tables and new computers, filled the new classroom with desks, and left the windows between the adjoining rooms.

Emeott was the lead teacher; two newly certified teachers were hired as academic interventionists. Emeott worked primarily on the "desk" side of the dual classroom. Both interventionists worked on the computer side, assisting students as needed, monitoring progress, and addressing any technical issues that arose. To maintain structure in the computer side, Emeott researched "flags" that could be installed on the side of a computer monitor and raised by the students to indicate, silently, when they needed an interventionist's assistance. The flags would have cost $5 each so, instead, Mr. Emeott purchased a roll of Velcro tape and 50 neon-pink and orange drinking straws that the students could literally "stick up" when they needed help.

Both groups of students had the same schedule: On Mondays, students pursued computer instruction at their own pace and each week received an exam review that would be due on and reviewed the following Monday. On Tuesdays, most students continued to work at their computers, while Emeott took time to learn more about each individual student. He sat with the students in the more private side of the classroom, talked about class work or sports or other interests, or helped them understand a difficult math concept that was impeding their progress. By midway through the trimester, Emeott also invited parents to join in private and semi-private Tuesday meetings. On Wednesdays, Emeott taught hands-on Geometry (tessellations and other practical applications) to half of the class, while the

other half continued learning by computer, and on Thursdays, the two halves of the class changed places.

On Fridays, Emeott administered "quiz to exhaustion"—adapted from the practice of mastery learning—to all students. According to Emeott, "Geometry is applied Algebra. If a student fails to progress in Geometry, it's usually because he or she has not mastered the Algebra requisite to solving the problem." A "quiz to exhaustion" requires mastery. Emeott would teach an Algebra concept and the students were given a four-question test on the concept. Unlike in traditional mastery learning, in which the entire class had to master the subject before the teacher moved on, in quizzes to exhaustion, as soon as students scored 100% on the quiz, they returned to the computer and continued their lessons. For the students that did not achieve 100% the first time, Emeott would find another way of explaining the problem, and another and another if that was what it took for each student to master the topic. Quizzes to exhaustion covered one- and two-step equations, variables on each side, supplementary angles, vertical angles, inequalities, find the slope, find the equation of the line, and graph lines. Emeott stated, "Once the students filled in the gaps in their Algebra knowledge and skills, Geometry became more understandable. The students made themselves more capable of success."

When a student achieved 100% on a quiz to exhaustion—sometimes on the first try, and sometimes after multiple tries—he was able to return to online computer instruction in Geometry. There, he could determine his own level of mastery. If, for instance, a student aspired to a grade of B and was willing to put in the effort for it, he could establish 80% or higher as the proficiency level he needed to meet on chapter tests in order to move on to the next lesson. If a student asked to be held to a higher standard, the Interventionist could alter the parameters to enable the student to pursue excellence. Students could check their progress and pace through the course anytime they wished.

One of the two interventionists was certified to teach secondary mathematics three years ago but is content in her current role and said, "I like my job. I get the one-on-one with students—which is the thing I like best about teaching—without the stuff I don't like: discipline, grading papers, and contacting parents."

The other has applied for more than 30 traditional teaching jobs. Each time, Emeott writes a letter of recommendation, lauding the interventionist's work with students and his increasing hands-on knowledge of numerous teaching methods. Emeott says, "It's really just a horrible job market right now, or we'd have lost him a year ago."

Nearly 90% of students reported that quizzes to exhaustion helped them understand Geometry better.

Results

Note taking was not required. Nonetheless, more than 75% of the students reported that they most often or always took e-notes on lessons.

When the state first announced the new graduation requirements, KPS administrators moved up the district's own deadline for compliance, specifically to afford themselves time (and ironically, greater urgency) to address issues that were likely to arise from the new mandate. Those issues became clear in the first year: without alternative ways to learn Geometry, nearly one-third of the students would not meet graduation requirements; some might, if they continued to be unsuccessful in Geometry, give up altogether.

Although blended instruction Geometry is not the only alternative that KPS offers students who are struggling to meet graduation requirements, it has proven, in just one year, to be a viable and valuable approach to teaching and learning. As implemented at KPS, it offers greater opportunities for teacher-student relationship building, student "ownership" of their education and outcomes, and real "team" teaching. Ultimately and most importantly, however, the pilot proved that some students can achieve greater academic success in a blended instruction classroom than they can in a traditional one. In fact, the pilot blended instruction Geometry course was so successful that the method is being used in two sections of Algebra I, two sections of Geometry, two sections of Algebra II, and one math elective in the fall of 2011–2012, and is being piloted in high school Biology and Chemistry.

True to the pledge made in the spring 2010 letter to parents, students in the pilot took the same comprehensive exams as students in the traditional Geometry classes. At the end of the first trimester, 58% of the students in the traditional Geometry class passed the class and final exam; 89% of the blended instruction students passed. Again in the second trimester, 89% of the pilot course students passed, while 75% of the students in the traditional Geometry class passed. Also by the end of second trimester, some of the students in the pilot course—those who had received a B, C, or D in Algebra—were earning A grades in Geometry. And the new method seemed to be agreeing with the students too: though all 100 were offered the option of transferring into a traditional class in the second trimester, 94 students stayed and completed the blended instruction Geometry course. Seventy-five percent of the pilot course students completed Geometry in two trimesters and have already signed up to take Algebra II in a blended instruction classroom.

There were numerous other benefits from the pilot. Emeott observed that, "Over the past 14 years I've been teaching and coaching at Kentwood, I've seen again and again how the relationship between a teacher and a student can change the educational process. If a student trusts and likes his teacher, he will work harder and try harder. Conversely, if a student becomes alienated from the teacher, she can sit through a class for an entire trimester, stubbornly refusing to learn." Because the students progressed at their own pace—with no one waiting for others to catch up and no one becoming lost while the larger class progressed to the next lesson—Emeott and the interventionists had more time to interact one-on-one with each student. Emeott said, "I had the luxury of spending the entire class period with one student if he needed my help. I could bring in parents, and we could work together to help a student become more successful—not just in Geometry, but in school and maybe even in life."

The ratio of approximately 16 students to one adult also offered students a choice. If they didn't respond well to one instructor, they could go to another. Students might seek three different explanations of a concept, in addition to the ones they had already listened to online, until they found the one that unlocked the mystery for them. More than 68% of the students surveyed said that they agreed or strongly agreed that their teachers helped them understand the material better.

The three-instructor model worked well to help keep newly certified teachers in the field until full-time teaching jobs open. It also offered an entirely new approach to team teaching. Emeott found it to be the first real team experience he had in his career. "We talked together all the time. We could brainstorm solutions, share experiences we had had with each student, and ask for help from one another to reach our students. We weren't team teaching," he said. "We were a teaching team."

More than 84% of the students said they learned as much or more in blended instruction Geometry as they had in traditional Algebra.

Students not only found a way to fulfill graduation requirements, they also learned, in the process, *how* they learned. They were in control of their own learning and their own grades. If they failed, it was because they failed to finish. They were learning to take responsibility, manage their time, finish the job, and ask for help when they needed it. As a result, the class, though larger than most, had fewer disciplinary referrals than usual in a high school classroom. Emeott noted that students stayed so focused on their work that there wasn't much chatting. Because they could go to Google or YouTube to look for another explanation or illustration of a concept when needed, they weren't bored. There were no frustrating exchanges about forgotten books or pencils.

Students began adopting good study habits, not to please a teacher or to stop an adult from nagging them, but because they found them useful. In a survey of blended instruction students, they all indicated that they did work outside of class, anywhere from an hour or two a week to more than four hours. One student reported that even after the Internet service to his home was repaired, he continued to go to the school library after school to finish his work. Another said that she used her smart phone to take a quiz while riding in the car on the way to visit her grandmother. More than 90% of students reported taking e-notes or handwritten notes during their lessons—not because they had to turn them in or because they were required, but because taking notes helped them learn.

The key to success, according to student surveys, was not simply in offering computer instruction, it was in blending computer instruction with teacher facilitation and support. Sixty-six percent reported that teachers helped them understand the material better; 83% said that teacher-directed pullout projects helped them better understand Geometry.

Implications

When students filled out their surveys at the end of blended instruction Geometry, they were asked what advice they would give to a student new to the class. Though they were not required to answer, every one of them did. They offered good advice, such as "Don't let yourself get behind . . . it's hard to catch up," and "Do your work after school too," and "Take good notes," and "Pay attention to the lessons and do your best, but if you still don't get it, ask for help."

Perhaps there is as much value in what the students learned about themselves, their learning styles, and their study habits, as in what they learned about Geometry.

Summary Recommendations

- If the subject requires pre-knowledge or skills, as it does for Geometry, spend teaching time ensuring that students have the skills they need to progress independently through the content.
- "Capturing Kids' Hearts"—and Kentwood Public Schools—hold that relationships are critical and fundamental to the learning process. Ensure that your blended learning program has as much "high contact" as it does "high tech."
- Look for ways to make your project cost efficient, such as using straws and Velcro instead of more expensive pop-up flags, reassigning computers from another classroom rather than purchasing new, and selecting classrooms that can be modified easily (e.g., existing doorways between the rooms) to accommodate blended learning. The pilot project at KPS cost approximately $50,000 for new equipment and furnishings; the new blended instruction offerings this fall cost approximately $5,000 each for modifications and equipment.
- Staff blended instruction classes with your best, most innovative and flexible teachers; seek qualified assistants to strengthen expert-to-student ratios.

There may also be value in sharing what KPS administrators and teachers learned from this initial foray into blended instruction. First, and probably most importantly, the project was consistent with the culture of the district. The pilot arose from the core directive and exemplified the values of the district; users informed its design. Because the district administration empowered its teachers to respond in the best interest of their students, the design was also flexible, and it did change in the first few months of the class.

Above all, the pilot offering arose from an administrative certainty that making the subject easier or altering the grading scale for required mathematics courses was not the way that Kentwood students would meet the new state graduation requirements. KPS offers its students new routes to their destination, not new destinations.

Finally, it illustrates that reduced funding does not have to translate into lesser quality. In fact, in KPS's case, it cost less to do more. The pilot offered a 16:1 student-teacher ratio, rather than the standard 30:1, yet it cost approximately 25% less. KPS was able to provide an opportunity for two newly certified professionals to begin their careers as interventionists. Though this model may challenge the status quo, it offers the flexibility to take full advantage of technological innovations and respond to current financial constraints. Districts must find ways to do more with less—any other approach is simply wishful thinking and fantasy. The cost for the two interventionists, combined, was less than half the annual cost of just one teacher. Both interventionists

were highly qualified content experts. Their different personalities and teaching persona offered students greater opportunities to bond with an adult in the classroom.

David Emeott learned some new teaching strategies and, like his students, a bit about himself. "I had to give up some of my identification as a teacher. I used to be in control of the classroom. Now I have to step out of the way." Emeott believes that to blend instruction a teacher must put aside his or her ego. His willingness to learn is one of the reasons that KPS tapped Emeott to pilot blended instruction. A teacher like Emeott is critical to the success of the pilot. Emeott is well respected by students and peers; he has charisma, enthusiasm, intelligence, and an adventurousness that seeks new challenges. In 2012, Emeott was one of four finalists for State Teacher of the Year.

Emeott will change the class schedule for the upcoming year. In the pilot, he planned half hands-on and half computer learning for students. Midway, when he found that the key to student success was mastery of several Algebraic concepts, he changed the schedule. "Now, it's one-third hands-on, one-third computer, and one-third remedial." Once again, the teacher's willingness to be flexible and responsive is an important factor in the success or failure of blended instruction.

Also this year, KPS plans to bring demonstrations into the middle schools. On parent nights, students and parents will have the opportunity to use e2020 to work through a chapter in a subject of their choice.

Emeott believes that when KPS offers blended instruction in Chemistry and Biology this coming year, teachers of those subjects will understand the importance of the physical classroom structure. The adjacent classrooms with windows between them, Emeott believes now, may be a happy accident that turned out to be one of the keys to success.

Besides offering blended instruction in at least a half-dozen math classes and piloting the program in two science classes this fall, KPS is encouraging teachers to explore a natural evolution from blended learning: the flipped classroom. When Emeott learned of the flipped method, he implemented it within the week, rather than waiting for a new trimester. "I can't go back to the traditional model," he said. "It's not what's best for kids." As in the blended classroom, the flipped classroom enables students to view lessons from a variety of instructors. "This way," said Emeott, "students have another gateway to knowledge and information, to analyzing how and from whom they learn."

Emeott and district leaders believe there are opportunities for further study. They wonder whether students' success in blended instruction classes is translating to greater success in other classes or in other aspects of their lives. They hope that a study would support their own hypotheses that students are transferring their new skills—self-management, time management, focusing on task, note taking, goal setting, and others—to other settings. Administrators expect that they are. But then, Kentwood Public Schools has always had high expectations for its students.

About the Authors

Dr. Scott Palczewski

Superintendent of Kentwood Public Schools for the past five years and a member of the National Superintendents Roundtable. Dr. Palczewski served on the Executive Council of the Michigan Negotiators Association and has led a number of instructional initiatives at the state and local level.

Evan Hordyk

Evan currently serves as the Executive Director of Secondary Education for Kentwood Public Schools and has served in various capacities of district leadership for 12 years. Evan's background is in technology and secondary education. He has presented to educators at the local, state and national level. In all of his interactions, he aspires to encourage creative thinking about all that we do as educators, parents and community members, to equip students to be contributing members of our global community.

John R. Keenoy

John Keenoy is the principal of East Kentwood High School. Mr. Keenoy has been with Kentwood Public Schools for 22 years as a teacher, elementary, middle and high school principal. John is a member of the National Association of Secondary School Principals and has presented at the National School Board Association conference as well as the ASD National Conference.

David Emeott

David is a 15 year veteran teacher in the Kentwood Public School district, having earned a Bachelor degree from Central Michigan and a Masters from Western Michigan. As one of 4 finalists for Michigan Teacher of the Year in 2012 David has provided guidance and insight to his colleagues in the areas of Blended instruction. David is also the Track and Field Coach at East Kentwood, winning three Coach of the Year awards and in 2011 was a National Coach of the Year finalist.

SECTION FIVE

University Program

CHAPTER

11

The Stanford University Online High School

Raymond Ravaglia, Associate Dean and Director, Stanford Pre-Collegiate Studies

Dr. Jan Keating, Founding Headmaster, Stanford University Online High School

Dr. Lindsay Oishi, Institutional Researcher

The Stanford University (SU) Online High School (OHS) is a fully accredited school serving academically gifted students in grades 7 to 12, which operates independently within Stanford Pre-Collegiate Studies. All classes are online, with the exception of an optional residential summer program on the university campus. Enrollment varies, with some students taking a single course, many combining part-time online study with attendance at a brick-and-mortar school, and a cohort working full-time toward earning a diploma from SU OHS. The school offers a wide range of college preparatory and college-level courses, with instructors who are experts in their fields. The unique core curriculum emphasizes critical thinking and argument through a rigorous and integrated study of science, the history of science, political theory, and philosophy. In the 2012–2013 school year, SU OHS will serve approximately 500 students in the United States and abroad.

Context

Building on research into computer-based instruction and gifted education dating from the early 1960s, the Education Program for Gifted Youth (EPGY) at Stanford University was founded in 1992 by Patrick Suppes and Raymond Ravaglia as a means to address the academic needs of students that were not being adequately addressed by their local schools. Through a combination of technical and instructional expertise, EPGY's mission has been to provide high-ability students of all ages with an individualized educational experience, optimized in both pace and content. For over 25 years, EPGY has fulfilled its original mission by providing hundreds of thousands of students throughout the United States and the world access to courses in a variety of subjects at levels ranging from kindergarten through advanced-undergraduate.

In 2005, EPGY set its sights on a much more ambitious undertaking, one that combined the existing courses with live seminar instruction using synchronous, multipoint, video-based, web conferencing. After a great deal of planning and discussion, in 2006, EPGY launched a fully-accredited, diploma-granting Online High School (OHS).

OHS grew out of what we learned from our experiences from EPGY about making education compelling and making the most of class time. For the first 15 years, we had focused on providing gifted students with individualization and self-pacing. The advantage of this approach was two-fold: it made essential use of the computer as a tool for individualization, and it provided students with maximum control over when and how they learned. While the isolated-student, enrichment-focused approach was both sound and appropriate for our target population, it had shortcomings when applied to an institution for full-time secondary education. First, there are major differences between taking a single course for enrichment and pursuing a complete course of study, which have important consequences for course design, program sequencing, and academic counseling. Second, we had learned from students that one of the most valuable features of academically advanced programs is not the content alone, but also the invigorating experience of learning in a cohort comprised of like-minded students with similar abilities and with an outstanding instructor. These two insights made us commit to the synchronous, seminar style of instruction for all courses at OHS, instead of the more traditional asynchronous, student-directed approach that was used at EPGY.

In 2012, Stanford Pre-Collegiate Studies (SPCS) was formed with the goal of becoming the focal point for pre-collegiate activities within Stanford University. SPCS grew out of, and ultimately subsumed, what was called the Education Program for Gifted Youth. The newly named Stanford University Online High School (formerly the Education Program for Gifted Youth Online High School) now sits within SPCS.

Overview

History and Initial Milestones

The Stanford University (SU) Online High School (OHS) at Stanford University was founded in 2006 by Professor Patrick Suppes and Raymond Ravaglia with support from the Malone Family Foundation. SU OHS operates from within Stanford Pre-Collegiate Studies at Stanford University as a six-year independent school with the ability to grant diplomas. The target population for SU OHS is gifted students whose abilities and needs cause them to look for educational opportunities beyond those presently available at their local high schools. SU OHS attracts students from throughout the United States and around the world. While the physical location of the staff offices and computer server infrastructure is on the Stanford University campus, SU OHS student population does not meet on a physical campus, with the exception of an optional residential summer program at Stanford. While SU OHS is tuition based, it provides a combination of need-based and merit-based scholarships.

When OHS first opened its doors in September 2006, it primarily served grades 10 through 12, admitting advanced ninth grade students with compelling academic needs. During the first year of operation, enrollment was 29 full-time and part-time students, and the student to instructor ratio was 3:1. In the spring of its first year of operation, OHS was granted its interim WASC accreditation. In year 2, all of OHS AP courses were approved by the College Board, and OHS was also approved as an online provider by the University of California. In year 3, OHS received a second gift from the Malone Family Foundation to add the 7th and 8th grades (enrollment breakdown shown below).

Blended Learning Approach

The Innosight Institute defines blended learning as "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." They refine this definition by identifying four models of blended learning: rotation, flex, self-blend, and enriched virtual. SU OHS is considered a self-blend model because students can take any number of classes with SU OHS and, at the same time, attend their local brick-and-mortar school.

What is unique about SU OHS curriculum and instruction?

The mission statement of SU OHS states:

Through a combination of advanced technology, rigorous academics, and the resources of Stanford University, the Online High School affords gifted students everywhere an education ideally suited to their needs:

- one which sets high expectations and challenges them to reach their potential;
- one which cultivates creativity, fosters analytical reason, and refines eristic skills; and
- one in which students pursue intellectual passions, engage in philosophical reflection, building the foundation for success not just in future academic pursuits but also in life itself.

OHS aims to be a school where

- diverse students can come together in a supportive environment;
- academic excellence and intellectual rigor are the norm;
- talented instructors take an active role in fostering a community of learners;
- students take responsibility for their actions and their education;
- students demonstrate integrity, tolerance, and a concern for the common good; students can accelerate their education and move beyond traditional high school courses;
- students can pursue diverse interests and outside educational opportunities; and
- students develop an undying appreciation for the life of the mind.

Graduates of the Online High School will

- receive an education comparable to that provided by the best secondary schools;
- matriculate at leading colleges and universities in the United States and the world; and
- develop the tools required to be successful in their future academic pursuits and in their lives.

All aspects of OHS curriculum embody a philosophy that an education must foster critical reasoning and argumentative skills and should do so in the context of engaging the student with advanced academic content. A central component of SU OHS education is its unique Core Sequence of philosophy courses, which cultivates critical and creative thought and provides a common intellectual framework that lends unity to the curriculum and the experiences of OHS students. Students also have ample opportunity to deepen their knowledge in particular disciplines through OHS's broad offering of Advanced Placement (AP) courses, as well as post-AP university-level courses in numerous subject areas.

The Core Sequence is a unique and central component of SU OHS academic program that embodies the tenets of our mission. All students pursuing SU OHS diploma take this sequence of year-long seminar-style courses. In Core courses, the subject matters of science, history of science, political theory, and philosophy provide a forum for developing a range of analytical and philosophical skills that can be applied broadly in both academic and public reasoning. The common intellectual framework that the Core provides is characterized by an ability to ask conceptual and foundational questions in a particular

discipline, a preparation to think critically about work and discourse in these disciplines, and a mastery of the principles and practice of rigorous and logically informed reasoning.

The individual Core courses realize these goals in their themes, methods, and questions. In Methodology of Science, students examine the nature of statistical analysis of evidence in the context of biology, and also develop the technical skills to assess and employ such evidence. In History of Science, students confront the circumstances under which the formation of scientific theories has occurred historically, and learn to analyze the argumentative structure which grounds theories in evidence. The analysis of various theoretical views of political concepts and institutions that students undertake in Democracy, Freedom, and the Rule of Law in turn establishes a foundation for critically assessing rhetoric and equivocal use of concepts in political discourse. Critical Reading and Argumentation explicitly discusses analytical techniques highlighted in each of the courses, including reconstruction of an author's position, identification of neglected possibilities and problematic assumptions and inferences, and effective use of thought experiments and counterexamples.

The intellectual framework of the Core extends beyond the content and norms of thinking and writing in the individual disciplines of the courses. In Core, students study the standards and structures of reasoning common to work in the sciences and humanities alike, and that they encounter in each of their courses at SU OHS. The expertise, skills, and habits of mind cultivated in the Core program are therefore the foundation that both unifies our curriculum and prepares our students for subsequent achievement and citizenship.

SU OHS classes are conducted through the use of web-based videoconferencing technology. Students listen to recorded lectures, and then engage in discussion seminars with their instructors and each other in virtual classrooms in real time. The flexible college-like class schedule encourages independence, discipline, and strong time management skills, as it accommodates the exceptional and diverse talents and pursuits of our students. OHS uses the Saba Centra system as the backbone of the school to provide the real-time video-based shared-whiteboard conferencing system. As this is the environment within which students experience their instructors and each other, this constitutes the technology infrastructure of their school. OHS uses Powerschool for its Student Information System and E-college for its course management system.

Outside of formal class time, SU OHS students participate in a rich array of interactions and activities. In this highly personalized learning environment, instructors work closely with students in individual directed study courses, homerooms, and informal counseling contexts to mentor students in the development of their academic interests and talents. Students in school clubs meet together with faculty advisors, student government officers decide on issues of importance to the student body, and students publish the school newspaper and yearbook. The annual school-wide graduation celebration at Stanford provides yet another opportunity for students to gather and connect. SU OHS students also have the unique opportunity to engage directly with the vast material and human resources of Stanford University. In our residential summer program, students work in Stanford's wet labs, libraries, and archives, and have the opportunity to meet with Stanford undergraduates, faculty, and admissions officers.

Most OHS instructors hold Ph.D. degrees from Stanford University or peer institutions, and were chosen for their expertise in their academic disciplines and for their experience teaching highly talented students at both the high school and college levels (Table 11-1). Instructors need this level of expertise because they are responsible for designing courses in their fields. SU OHS uses an outside search firm, as well as the Stanford's jobs website, to recruit and hire qualified instructors.

Table 11-1 Instructional Staff Data in 2010

Instructional Staff Data in 2010		
Highest Degree	**Number of Instructors**	**Percentage of Instructors**
Doctorate	14	56%
Master's	10	40%
Bachelor's	1	4%

Who attends SU OHS?

SU OHS draws students from diverse national, socioeconomic, ethnic, and educational backgrounds. Students attending SU OHS live throughout the United States, Europe, and Asia, and represent a broad range of ages, talents, and interests. Financial aid ensures that SU OHS is accessible to qualified students, regardless of their economic circumstances. Students are admitted to SU OHS based on evidence that they have the academic capacity to do well in our courses, that they have demonstrated a strong work ethic and enthusiasm for learning, and that they have a record of academic success in a school or homeschool setting. The common denominator among all admitted students is that they are academically talented and intellectually motivated. Most of our students reside in California, which is not surprising given the location of Stanford University and the size of California. The number of male and female students is nearly equal. Table 11-2 gives enrollment statistics for OHS since its inception.

Table 11-2 SU OHS Enrollment Statistics

SU OHS Enrollment Statistics						
Category	**Year**					
Students	2011-12	2010-11	2009-10	2008-09	2007-08	2006-07
Returning	164	114	81	51	26	0
New	219	144	115	80	52	29
Affiliate *	25	25	17	10	1	0
Total	408	283	213	141	79	29
Full-Time	126	91	82	64	40	18
Part-Time	90	66	44	44	34	10
Single Course	192	126	87	33	5	1
Total	408	283	213	141	79	29

* Affiliate students are students who attend another school full-time and take 1 or 2 classes from SU OHS. These students do not apply to SU OHS directly, rather their school has a relationship with SU OHS and their counselors work with SU OHS counselors to properly place these students in their SU OHS classes.

Results

Like all schools, we are proud of our students, and given the qualities of our student population, one would expect these students to have many accomplishments, both academic and extracurricular—and they do. Although we could take this entire chapter to highlight our students' accomplishments over the past five years, here are some examples that show that a virtual learning environment can actually enhance a student's ability to achieve both inside and outside the classroom. Our students are working in cutting-edge biomedical labs, earning positions on the U.S. Science Olympiad teams, acting on hit Disney shows, and playing competitive sports across the world. One of the most surprising accomplishments was that in 2010, our Junior Engineering Technical Society (JETS) team was invited to Washington, D.C., to participate in the National Engineering Design Challenge, and won two of the top five awards: Outstanding Engineering Design and Most Innovative Use of Technology. In this competition, students are tasked with identifying a need for a real person with a disability in their community, and then designing, producing, and delivering an assistive technology device. When the team was interviewed by a major news network, the reporter asked whether the DC event was the first time they had ever met one another in person. The answer was yes. And yet, they were able to build a complicated device together as a team. What we are learning is that the students do not see the online nature of the school as an obstacle. It is not surprising, then, that enrollment at OHS has been growing steadily each year (Figure 11-1). We anticipate that the enrollment for the 2012–2013 school year will surpass 500 students.

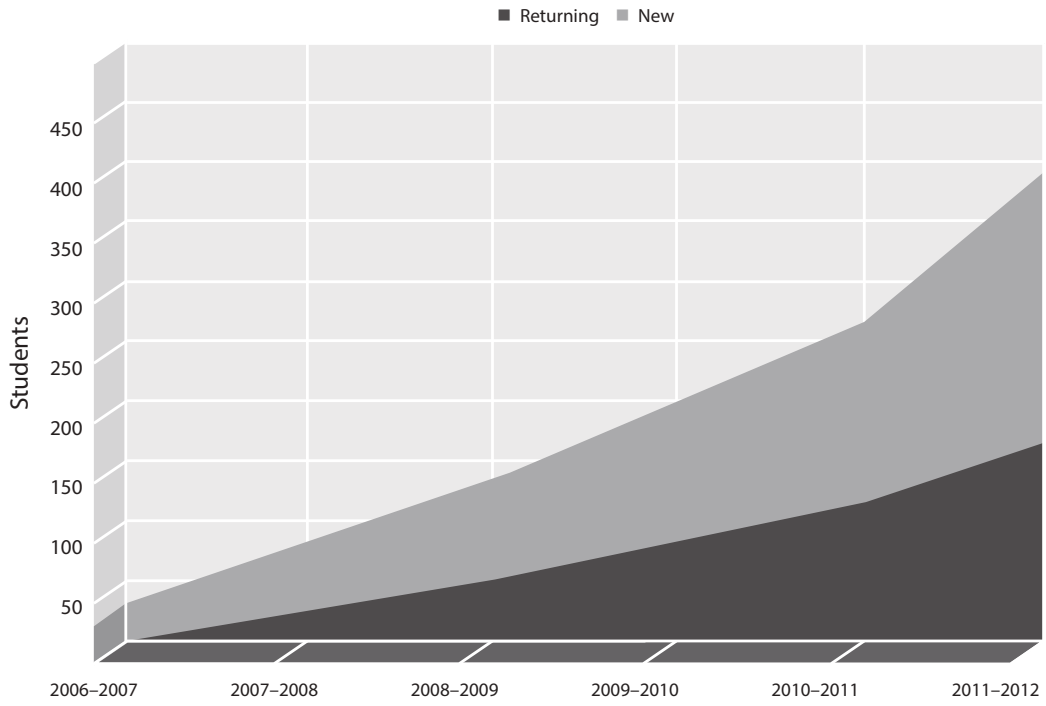

Figure 11-1 Number of new and returning students from 2006 to present.

General

There are many indicators of the Online High School's growing success, including applications and enrollment, college admissions, external test performance, and student academic and social satisfaction. As shown in Figure 11-1, the numbers of admitted students has increased steadily each year. Furthermore, all SU OHS graduates have gained acceptance into a competitive college or university. In 2009, five of our seniors (30% of the graduating class) matriculated to Stanford University. Our graduates have also been quite successful in gaining admission to the top-ranked University of California campuses. In the future, we intend to systematically track the progress of our graduates in their first year at the university level to determine the efficacy of our curriculum and instruction relative to success at the post-secondary level. While formal analysis of this type has not yet been done, our anecdotal analysis suggests that our students find the first year of college to be "vaguely disappointing," "lacking the intellectual vitality" of OHS.

Although all students at OHS are academically talented and are expected to perform well on aptitude tests, we do believe that attendance at OHS has a positive influence on their academic achievement. Exposed to the rigorous academic environment of SU OHS, our students thrive. As our school grows, we predict that the differences between our testing averages and the national averages will continue to widen and the swings in mean scores will dampen.

Test scores for the senior classes of 2009 and 2010 are presented below, in Tables 11-3 and 11-4, with two caveats: the sample size is small, and because our students do not test on-site, score reporting has been unreliable, so that some of our best students are missing from the sample. Please view this section accordingly. Beyond test scores, it is also noteworthy that the breadth of SAT II Subject Tests taken by OHS full-time students has consistently increased. As OHS curriculum has expanded, so has the range of subjects in which students attempt to take SAT II Subject Tests. In 2009, students took five different categories of subject tests, while in 2010 students participated in double that number. This trend continued in 2011, with increases in both the number of students taking SAT II Subject Tests and the breadth of tests taken. Trends in students taking Advanced Placement (AP) exams show a similar pattern to the SAT results. More OHS students took AP exams in 2010 than in 2009, and the subjects of AP exams taken also expanded. In 2011, we saw a similar growth in test taking.

Table 11-3 SAT Results from 2009 and 2010 School Years

SAT Results from 2009 and 2010 School Years						
SAT I	**Middle 50% (2009)**	**Mean (2009)**	**Total Tested**	**Middle 50% (2010)**	**Mean (2010)**	**Total Tested**
Critical Reading	650–760	721		740–800	765	
Math	690–780	721		690–740	711	
Writing	660–760	716		710–770	735	
Total	2,040–2,270	2,157	16	2,140–2,280	2,211	14

SAT Results from 2009 and 2010 School Years, cont.						
SAT II Subject Tests	**Middle 50% (2009)**	**Mean (2009)**	**Total Tested**	**Middle 50% (2010)**	**Mean (2010)**	**Total Tested**
Biology–Ecology				650–740	710	3
Biology–Molecular				600–740	710	4
Chemistry	720–780	764	5	690—740	710	3
English Literature	690–750	720	2	720–770	717	10
Latin				780–800	790	2
Math Level I				770–770	770	1
Math Level II	780–800	793	9	700–800	751	8
Physics	770–800	790	3	670–800	740	4
U.S. History	610–780	735	4	630–720	688	5
World History				730–730	730	2

Table 11-4 AP Exam Results from 2009 and 2010 School Years

AP Exam Results from 2009 and 2010 School Years		
AP Tests for Seniors	**2009**	**2010**
Number of students taking an AP test	12	15
Total number of AP tests	49	67
% of students scoring 4 or 5	88%	75%
% of students with a score of 3 and above	98%	96%

With the addition of the 7th through 9th grades, we hope to improve our external testing performance. Being able to work with students earlier will give us the opportunity to build the skills and content knowledge necessary to do well on these exams. We hope to show that on average, the longer students attend SU OHS, the better they perform on external tests.

An interesting trend revealed by the breakdown of the number of courses students are requesting is the largest increase in single course enrollments (Figure 11-2). We believe this trend is a result of our growing reputation among our target population, the fact that some of SU OHS classes are not offered as part of the EPGY distance learning program, and the fact that many students are not yet ready to commit to what they see as an experimental school. For example, students who wish to take AP World History can only take it through SU OHS, not the EPGY distance learning program. The effect of the growing number of single course enrollments on the school culture has yet to be determined, but a few preliminary observations are worth mentioning. Most instructors could not specify which of their students are taking a single course based on performance or attitude, which suggests that single course students are very well integrated. Students enrolled in single courses also actively participate in extracurricular activities, such as school clubs. Indeed, a member of our nationally ranked JETS Design Team was a student enrolled in a single SU OHS course. The addition of talented students to our student body, regardless of the number of classes in which they are enrolled, appears to only enrich our school; however, we do intend to monitor this trend and its impact on our school culture over the next few years.

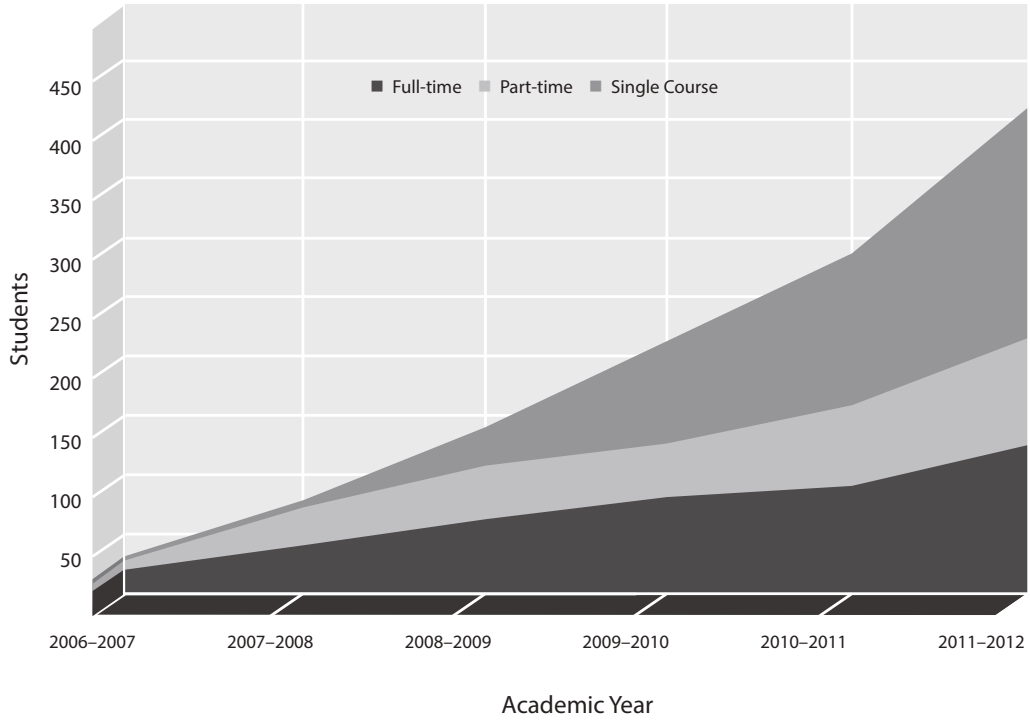

Figure 11-2 Number of full-time, part-time, and single course students, from 2006 to present.

Research

One of the major achievements of OHS in the 2010–2011 school year was the launch of a program of institutional research aimed at assessing student experience and satisfaction, both socially and academically. The preliminary results described in this chapter are only the beginning of a larger plan to share insights gained from our work. The research agenda includes quantitative data based on student surveys, and qualitative data from case studies, student and teacher interviews, and ethnographic observation.

The research was designed and conducted by the headmaster in conjunction with the head counselor and an institutional researcher. There were three initial research questions.

1. What do students perceive as the academic strengths and weaknesses of OHS?
2. What are extracurricular activities, social interaction, and overall student life like for OHS students?
3. How do student life and academic experiences differ, based on self-chosen enrollment patterns (full-time, part-time, and single course online enrollment)?

For the first exploratory student survey, conducted in March 2011, we employed an online questionnaire tool (Qualtrics, 2011) to administer a set of scale-based items and open-ended (essay response) questions.

Participants (N=159) varied by enrollment status (full-time, part-time, or single course) and their secondary level (middle school or high school). Full-time students were defined as taking four or more courses with OHS, while part-time students were those taking two or three courses at OHS. Table 11-5 shows that the participation rate was 41.2% for single course students, 75.8% for part-time students, and 73.6% for full-time students. Gender was an optional question; 47.8% of the sample was male, 42.8% was female, and 9.4% did not state gender. Full-time and part-time students received the survey in their homeroom periods; single course students received an email link and completed the survey on their own time. Participants were told that their responses were anonymous and that they should be completely honest.

Table 11-5 Survey Participation by Enrollment Status and Grade Level

Survey Participation by Enrollment Status and Grade Level				
Grade Level	**Full-time N**	**Part-time N**	**Single Course N**	**Total N**
High School (Grades 9–12)	48	34	32	114
Middle School (Grades 7–8)	11	12	7	30
No response	8	4	3	15
Total Respondents (M, F, No response)	67 (33, 25, 9)	50 (22, 24, 4)	42 (21, 19, 2)	159 (76, 86, 15)
Total Enrollment	91	66	102	267
Participation Rate	73.6%	75.8%	41.2%	59.6%

Topics

In order to keep the survey relatively short and encourage participation and completion, only a few topics were emphasized. Several items were based on similar evaluations done at other online institutions, such as the Florida Virtual School. Academic questions included key aspects of effective teaching (communication, time-on-task, and intellectual challenge), self-reported learning and satisfaction measures (grasp of course material, quality of instruction, and likelihood to recommend), and comparisons to non-online courses. In addition, two open-ended questions asked students to comment on the specific strengths and weaknesses of academics at the online school and to give feedback on any related topic.

The student life section of the questionnaire also used items taken from existing research on online educational environments, as well as questions created specifically for this study. Topics included other types of schools attended (e.g., public, private, or charter), extracurricular activities, non-school and school-related technology use (e.g., social networking and chatting), perception of school climate (e.g., connectedness, happiness, bullying, and alienation), and social relationships (e.g., friendships and isolation).

Summary of Preliminary Findings

The most common positive response students cited about academics at OHS was the high level of coursework and learning that they were able to achieve, and tightly linked to that was their appreciation for their instructors. The characteristics that made high-quality academic study possible—communication with teachers, challenging coursework, little wasted time, and hard work—are certainly not unique to this or any other online institution.

Due to the flexibility of the class structure, online students do not spend as much time attending school as their traditional-school peers, and they indicate that they appreciate being able to use this extra time in myriad ways. The nature of the study is also flexible, with recorded lectures, online discussions, web-based office hours, and remote learning activities all contributing to an environment that is designed for maximum efficiency. Even though students did complain about technical difficulties and problems created by distance, it was not in the ways one might expect. The qualitative responses about distance issues were less frequently about loneliness or isolation, and more often referring to the practical challenges of doing scientific labs or judging physical space online. It is encouraging, however, that student concerns about academic weaknesses of the online school did not differ by enrollment level, indicating that the problems, or their perceived severity, do not seem to increase with time spent online.

In regard to student life, the results so far are promising: as a whole, students enrolled at OHS are physically active, do not use technology excessively, feel connected and happy with the school, have no problems with bullying, and have sufficient friendships. While students enrolled online do appear to have fewer opportunities to engage in organized athletics, they make up for it with personal exercise. Full-time students also more frequently use the Internet for schoolwork and chatting; however, there is no reason to believe that this is a negative outcome. Full-time and part-time students feel closer to other students at the online school than single course students, which is natural and implies that the course design, with asynchronous and synchronous components, allows sufficient opportunity for real-time peer interaction. Finally, in the case of the one concerning measure—that more full-time students reported feeling alone often—we would like to offer, anecdotally, that many of these students in their general feedback wrote that they have a higher desire for time alone than their peers and, accordingly, are happy with their school environment.

Finally, we wish to note that the most traditional measure of a school's success—student achievement—is very difficult to demonstrate at a school where all students are gifted. Though self-reported academic satisfaction is sometimes criticized as "fuzzy" data, we believe that it is, in fact, invaluable.

Data Supporting Preliminary Findings

1. Academic satisfaction at OHS is high.

Student responses to the academic satisfaction questions show that they are satisfied with their communication with teachers, their own perceived learning, the quality of OHS courses, and their use of time in class. Figure 11-3 shows responses to the question "Based on its academics, would you recommend the Online High School to other students?" Of the 148 participants who answered the question, 85.1% (126) said yes, 5.4% (8) said no, and 9.5% (14) said they were not sure.

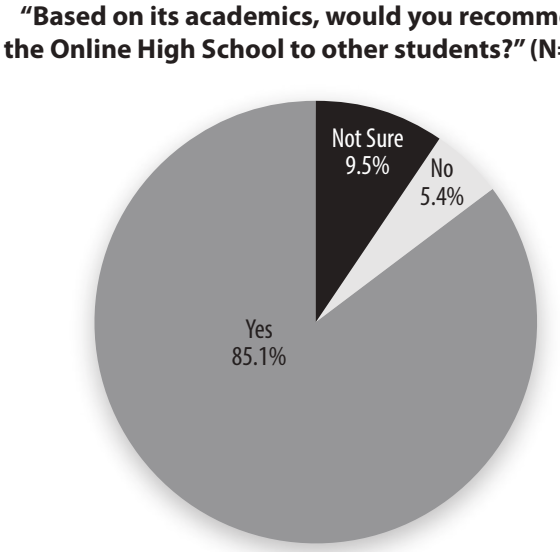

Figure 11-3 "Based on its academics, would you recommend the Online High School to other students?" (N=148).

As shown in Table 11-6, communication with teachers was rated as a mean of 3.5 (std. dev. 0.73), which indicates a semantic value between "Good" and "Great." Grasp of course material was 3.66 out of 4 (4="Great"), learning compared to non-online courses was 4.54 (std. dev. 0.85) out of 5 (5="Learn much more"), and quality of courses compared to non-online courses was 4.39 (std. dev. 0.83) (4="Better" and 5="Much Better").

Students compared the online school favorably to other schools. Wasted time in classes at the online school was extremely low, with a mean of 1.9 (std. dev. 0.85) at the online school—closest to 2="A little"—versus 3.36 (std. dev. 1.10) at non-online schools (3="A moderate amount" and 4="A lot"). Participants also indicated that courses at the online school were harder than courses at traditional, non-online schools, with a mean of 4.33 out of 5 (std. dev. 0.71).

Table 11-6 Descriptive Statistics for Likert-Scale Items on Students' Academic Satisfaction

Descriptive Statistics for Likert-Scale Items on Students' Academic Satisfaction					
Question	**N**	**Mean**	**Std. Deviation**	**Semantic Approximation**	**Range**
Communication with teachers is: (Poor–Great)	147	3.50	.734	Good/Great	1–4
Communication with other students is: (Poor–Great)	142	2.87	.914	Good	1–4
How much time do you feel is wasted in class? (None–Nearly All)	145	1.90	.848	A little	1–6
At the end of a course, my grasp of the course material is: (Poor–Great)	148	3.66	.578	Great	1–4
Compared to traditional (non-online) courses, do you learn: (Much less–Much more)	137	4.54	.849	More/Much more	1–5
Compared to traditional (non-online) courses, the quality of courses is: (Much worse–Much better)	140	4.39	.827	Better	1–5
Compared to traditional (non-online) courses, courses are: (Much easier–Much harder)	137	4.33	.708	Harder	1–5
In classes you've taken at other schools, how much time do you feel is wasted? (None–Nearly All)	138	3.36	1.100	A moderate amount	1–6

2. Students report more academic strengths than weaknesses at OHS.

The two open-ended questions on academic satisfaction at OHS were read holistically for themes without *a priori* hypotheses, and a short list of the most commonly appearing strengths and weaknesses that participants were coded for frequency (Figure 11-4). The three most common strengths were the high level of academic study and/or the amount of learning accomplished at the online school, the positive qualities of instructors, and academic flexibility (i.e., courses that were unavailable at other schools, ability to have varying academic structures, such as lectures, study halls, group work, or independent tutorial-type of study). Nearly 60% of participants freely mentioned academic challenge and high-level study at OHS as a strength; nearly 40% mentioned high-quality instructors as well. While only about 15% of students talked about academic flexibility, it is important to note that flexibility due to the online school's general environment was not coded when it was not uniquely academic (e.g., being able to listen to a lecture from home or any other physical location).

The three most common weaknesses were problems caused by being physically remote from the classroom or separate from the teachers and other students, having too much homework and/or academic-related stress, and technical issues such as Internet connectivity, software errors, or poor audio/visual resolution. Participants were less likely to report weaknesses than strengths, with less than 20% mentioning any one of the top three weaknesses, compared to larger proportions mentioning the two most common strengths (58.5% and 38.3% respectively).

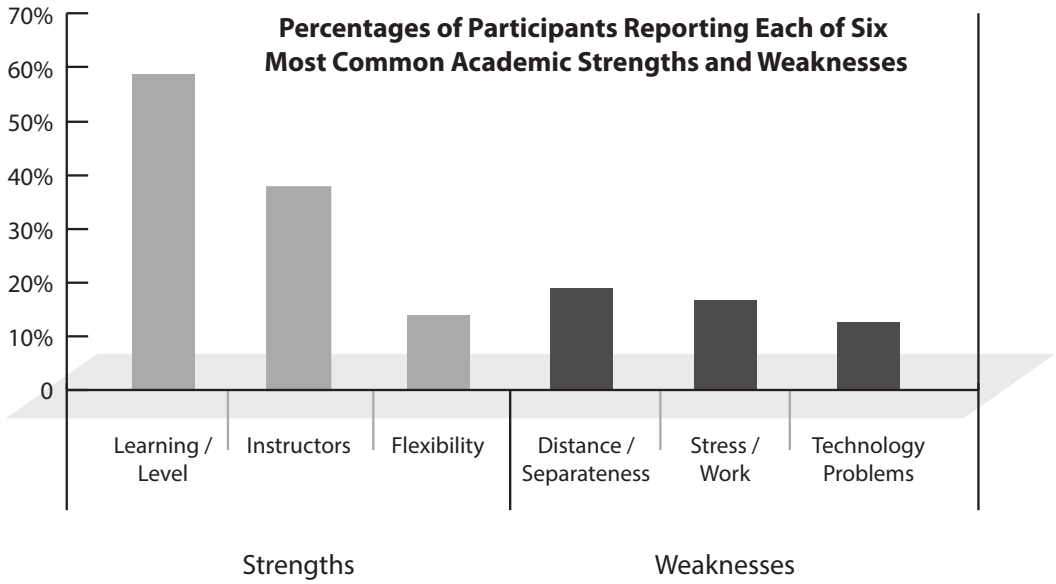

Figure 11-4 Percentages of participants reporting each of six most common academic strengths and weaknesses.

3. Most OHS students also study elsewhere, particularly public schools or at home.

Of the students who were part-time or single-course students, most also attended a public school (45% of single course students) or were home-schooled (48% of part-time students), as shown in Table 11-7. Although 72% of full-time students took classes at no other institution or at home, 9% of full-time OHS students also took one or more classes at a public school and 9% took one or more classes at a college or university. A small number of students (N=14) reported an enrollment pattern that included three or more types of learning environments (e.g., online, public, and a specialty school, such as a music academy).

Table 11-7 Types of Secondary Schools Attended by Study Participants

Types of Secondary Schools Attended by Study Participants			
School Type (N) (top three in **bold**)	Number	Percentage (of total N=159)	% Single / Part-time / Full-time (most frequent response per category in **bold**)
Only online	54	34.0%	2 / 10 / **72**
Public	36	22.6%	**45** / 22 / 9
Home school	35	22.0%	24 / **48** / 1
Private	17	10.7%	29 / 8 / 1
College	16	10.1%	7 / 14 / 9
Other	9	5.7%	5 / 8 / 4
Charter	6	3.8%	7 / 2 / 3
Total	173	108.8%*	

* The total is greater than 100% because 14 participants reported attending more than one other school.

4. OHS students participate regularly in extracurricular activities.

Students at OHS are reasonably active in terms of physical activity, both organized and self-driven, and in-person clubs and activities, based on the most common responses to the questions on extracurricular activities. Univariate analyses indicated an enrollment difference only for organized athletics, $p < .05$. Table 11-8 and Figure 11-5 display these means: single course and part-time students reported an average frequency of organized athletics of 3.64 (std. dev. 2.13) and 4.09 (std. dev. 1.96), respectively, while the mean for full-time online students was 2.95 (std. dev. 2.07). The range of possible responses was from 1, "Never" to 6,"Almost every day", with 2 indicating less than once a month, 3 as at least once a month, 4 as once a week, and 5 as two to three times per week for the last twelve months. Community service or volunteering was the least frequently reported activity, though the average across all enrollment groups was between less than once per month and once per month.

Table 11-8 ANOVA Table for Extracurricular Activity Items, by Enrollment

ANOVA Table for Extracurricular Activity Items, by Enrollment					
Item (Range 1–5)	**Single Course (N=36)**	**Part-Time (N=45)**	**Full-Time (N=56)**	**F (d.f.)**	**p-value**
Organized Athletics	3.64 (2.13)	4.09 (1.96)	2.95 (2.07)	3.73 (2, 147)	**.026***
Personal Exercise	4.53 (1.58)	4.82 (1.28)	4.59 (1.39)	0.48 (2, 141)	.619
In-Person Clubs / Activities	3.67 (1.74)	3.02 (1.60)	3.20 (1.70)	3.02 (2, 151)	.052
Community Service / Volunteering	2.61 (1.10)	2.38 (1.32)	2.54 (1.35)	0.94 (2, 149)	.394

* Item is significant at the $p < .05$ level, two-tailed.

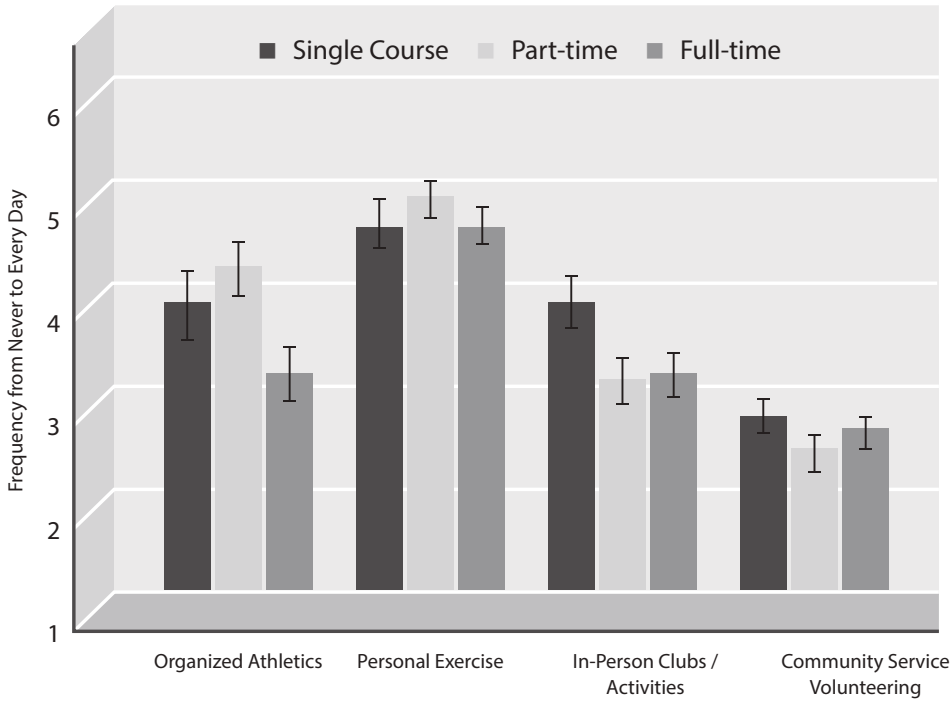

Figure 11-5 Mean frequency of engagement in extracurricular activities, by enrollment (bars represent standard errors).

5. OHS students use technology frequently for school and non-school purposes.

The modal response for students, regardless of enrollment, was that they used the Internet daily for schoolwork and other purposes; they also reported very infrequent video games or Internet games in the previous thirty-day period. Social networking sites—such as Facebook, My Space, and Twitter—were reported as used between once and two to three times per week, and online chat for non-school purposes was similar. Only one statistical test showed a significant difference by enrollment: using the Internet (excluding online classes) for school, $F(2, 150) = 5.05$, $p < .01$ (see Table 11-9). Full-time students reported a mean of 5.44 (std. dev. 0.92), while single course and part-time students' means were below 5 ("almost every day"): 4.75–4.93.

Table 11-9 ANOVA Table for Technology Use Items, by Enrollment

Item: In the last 30 days, how often have you used the following technologies for the stated purposes?					
Item	**Single Course (n=40)**	**Part-Time (n=46)**	**Full-Time (n=62)**	**F (d.f.)**	**p-value**
Video Games	1.65 (1.12)	2.13 (1.69)	1.82 (1.33)	1.16 (2, 149)	.318
Internet: Games	2.35 (1.39)	1.89 (1.16)	2.11 (1.55)	1.28 (2, 149)	.282
Internet: Schoolwork	4.75 (1.35)	4.93 (1.24)	5.44 (0.92)	5.05 (2, 150)	**.008***
Internet: Other	4.58 (1.60)	4.67 (1.42)	5.02 (1.40)	1.22 (2, 149)	.298
Social Networking	3.23 (2.22)	3.80 (1.97)	3.65 (1.95)	0.88 (2, 149)	.419
Online Chat: Non-School	3.03 (1.82)	3.26 (1.91)	3.63 (2.04)	1.70 (2, 151)	.187

* Item is significant at the $p < .01$ level, two-tailed.

6. OHS school climate is positive, with almost no bullying or social exclusion reported by students.

Students reported feeling moderately (scale response of 3) to very (4) connected to OHS, and said that they felt close to people at OHS between once (scale response of 3) and two to three times (4) per week (see Table 11-10). They also reported feeling happy to be at OHS between two to three times per week and almost every day (scale response of 5). Finally, they reported almost no bullying or feeling left out (alienation/social exclusion), with means very close to 1 ("Not in the last 30 days". Only six students out of 150 (3.7%) reporting bullying in the previous month, and only 9 reported feeling intentionally left out by other students (5.6%). Furthermore, most participants did not report feeling alone most of the time or wishing for more friends in the previous two-week period (see Table 11-11).

Table 11-10 ANOVA Table for School Climate Items, by Enrollment

ANOVA Table for School Climate Items, by Enrollment					
Items: How connected do you feel to OHS? In the last 30 days, how often have you felt close to other OHS students / happy to be at OHS / that other OHS students were being mean to you / that other OHS students had intentionally excluded you from activities?					
Item Range (1–6)	**Single Course (N=36)**	**Part-Time (N=47)**	**Full-Time (N=64)**	**F (d.f.)**	**p-value**
Connectedness*	3.05 (0.87)	3.27 (0.98)	3.37 (0.96)	1.46 (2, 151)	.235
Closeness	2.92 (1.75)	3.79 (1.72)	3.63 (1.64)	3.52 (2, 146)	**.032****
Happiness	4.75 (1.20)	4.62 (1.54)	4.23 (1.43)	1.83 (2, 144)	.164
Bullying	1.03 (0.17)	1.02 (0.15)	1.06 (0.30)	0.40 (2, 147)	.670
Alienation	1.00 (0.00)	1.17 (0.67)	1.13 (0.66)	0.70 (2, 147)	.500

* The range for the Connectedness item was 1–5.

** Item is significant at the $p < .05$ level, two-tailed.

Table 11-11 Frequencies and Percentages for Social Relationship Items, by Enrollment

Frequencies and Percentages for Social Relationship Items, by Enrollment		
Items: In the last two weeks, did you feel alone most of the time? Did you feel that you did not have any friends, or did you wish you had *more* friends?		
	Feeling Alone	**Insufficient Friendships**
Single Course (N=39)	7 (17.9%)	11 (28.2%)
Part-Time (N=47)	10 (21.3%)	19 (40.4%)
Full-Time (N=62)	26 (41.9%)	26 (41.9%)

Sustainability and Growth

Current enrollment trends suggest that SU OHS remains on schedule to be fully self-sustaining by the 2012–2013 academic year. We have been fortunate to have received two generous gifts from the Malone Family Foundation, which have covered our operating shortfall during the first six years of our existence. Longer term, if SU OHS is to realize the ambitious goals that we have set, it is essential that we foster a community of giving within our student and parent population, as well as from foundations and the wider community. Most significantly, a robust program of financial assistance is a prerequisite to ensuring that all students who are admitted to SU OHS are able to attend. As with any school, long-term maintenance of capital assets requires planning and the development of a capital reserve.

Implications

Responding to Challenges

As a virtual school, SU OHS has faced a number of challenges related to student experience, community, and professional development. While these are challenges that are faced by all schools, how we handle them differs because we are an online school lacking some of the physical resources or strategies typically employed by brick-and-mortar schools. This has been an area of exciting discovery, and the following points speak to some of the lessons we have learned and the steps we are taking to act on them.

Improving and expanding student support services. In general, our surveys show that we are doing a good job of meeting the academic needs of our gifted student population. We are committed to the success of each of our students and will continue to look for ways to improve our student support services. We intend to keep our class size low so that instructors can get to know their students, maintain a low student to counselor ratio, detect academic issues as early as possible, deliver targeted help or accommodations when appropriate, and take proactive steps to prevent problems from developing in the first place. Furthermore, one of our goals is to increase the number of opportunities that students have to interact with their teachers and classmates in person. Our strategies may include a winter or spring in-person session, as well as schoolwide, organized educational trips.

Developing better connections among all SU OHS stakeholders. All schools work to build personal connections between all stakeholders: teachers and students, students and other students, parents and school personnel, and parents and other parents. As an online school, one of our greatest challenges is building connections and the sense of community that develops from these connections. Over the past two years, we have focused our energies on creating a close-knit school community. We have made progress in this area by establishing homerooms, office hours, regular parent meetings, SU OHS regional gatherings, and newsletters; making instructors available to students on the Internet in the evening; and adding a new student-run radio program entitled NAPtime. We intend to continue expanding opportunities for parents to contribute their time, talents, and enthusiasm to SU OHS, as well as to facilitate a robust set of clubs and student-run organizations so that students can get to know one another outside of the classroom. We also have begun to connect our alumni in a more formal way, so that our school community can stay connected to our graduates and they can stay connected to one another. We know that if students and their families feel connected to the school community, open communication pathways and trust will develop, and students are much more likely to achieve academic success.

Developing clear feedback loops to understanding what we are doing well and highlight where improvement is needed, with respect to curriculum and instruction. SU OHS accepts academically talented students who have a record of academic success. Demonstrating that OHS in particular has positively changed the trajectory of this kind of student is not a simple matter. We need to understand the efficacy and impact of our curriculum and instruction in order to improve our practice. This will require diligent collection and objective analysis of a variety of student performance data, including

student performance on external exams, and perhaps even more importantly, the academic success of our graduates at the university level. We will need to compare how students perform each year relative to clearly identified course standards, as well as to document individual student progress longitudinally over the period of time they attend SU OHS. We will continue to refine our surveys to gauge student and parent satisfaction.

Anticipating and responding to communication and training challenges for staff in a growing school with the unique characteristics of SU OHS. SU OHS began with a small instructional and administrative staff necessarily attuned to the mission and vision of the school, as well as to the needs of a new and growing school. This staff worked together closely to envision and begin to implement a school capable of realizing these goals. As we transition to a larger school, taking on additional instructors and accordingly reshaping our leadership apparatus to preserve instructor time and retain an effective decision-making capacity, we have and will continue to face challenges of communication and shared understanding of central points of mission and practice.

Last year, we initiated an induction program for new instructors. We continue to revise and expand this program in light of a better understanding of which aspects of the school's identity and practice need to be directly communicated in the context of a school transitioning from a period of founding to one of sustained growth. In addition to the initial induction program, new instructors work throughout the year with more experienced veteran instructors, to continue to acclimate to SU OHS school community. There are also various professional development opportunities offered throughout the school year, some provided by SU OHS leadership, others provided by Stanford University, and still others provided by outside consultants.

A new leadership team, composed of department heads, has also been formed this year and requires further refinement as an effective tool for two-way communication between instructors and the policy-making process. Similarly, department and division meetings must continue to be integrated into this process; this year they have been utilized as mechanisms for studying the composition of the curriculum and the integration of its elements, engendering among instructors a more comprehensive understanding of the relationship between the mission and goals of the school and the curriculum that attempts to satisfy them. Finally, a Standing Committee on Instruction and Academic Affairs has also been conceived and formed this year to foster intellectually and academically motivated deliberation and discussion concerning the implementation of the mission and goals in the academic program.

These measures constitute preliminary efforts to establish and maintain communication and dynamic thinking about central features of the school throughout the faculty, from the course level to the department and administrative levels, to meet the challenge of maintaining focus on and understanding of the mission and strategies of an innovative and uniquely conceived school operating in a new and developing medium.

General Implications

In discussing the Online High School with parents, we always stress that it is the "schoolness" that is the essential attribute, not the "onlineness." If we had teleporter technology, we could just beam the students to Stanford, conduct seminars, and then beam them home afterwards. Until that day, we will use a variety of other technologies to bring the students, instructors, and campus together. In choosing technologies, our choices must remain driven by the vision of an idealized school and not by a desire to explore technology qua technology. Unless we do this, we will never reach the point where students and parents are choosing our school because it is the best school, rather than because their first choice could not accommodate their desire to do X, Y, or Z. Decisions based on quality of institution, instructors, or student population are far more readily imagined than someone saying "even though the parents and students are terrible, we just *loved* the course management system, so there was really no other choice."

Too much of the work in online learning has been driven by the limited vision of education propounded by textbook publishers and systems companies. The common thread uniting these groups is a view that equates education with the dissemination of content knowledge. While one can understand where this attitude comes from, and why certain parties would promote it, it fails to capture core facts about what an education is, namely learning how to do certain things (write, argue, analyze) in a variety of contexts.

The incidental learning that takes place in the classroom and around the school, in the context of content acquisition, is what underlies the frequently heard statements that "much of what you will learn at this institution you will learn outside of the classroom" or more simply that "an education is what remains when you have forgotten everything that you have learned." In designing our online schools, we must remember that we are providing students with an education.

Another implication of this work has been to rethink how classroom time is used, and in particular to distinguish between the fundamental synchronous and asynchronous components of the traditional classroom experience. Embracing the seminar as the pinnacle of effective classroom teaching, we have structured our school to make the seminar the seminal component. That said, we have also recognized that instructors do have points they want to make and have provided them with lecture time to do just that. However, if instructors are tempted to give a monolog during a seminar, they should instead record it and assign it as part of the homework. Live classroom time is a precious commodity not to be squandered.

Ironically, while we have been learning this at the Online High School, a number of faculty members at Stanford have also taken this lesson to heart. Increasingly, entry-level courses in computer science are being inverted, with lectures being video-recorded ahead of time for students to watch, and classrooms are being given over to discussion. That this trend is likely to continue is driven in part from the realization that as one moves from lecturing to active teaching in a seminar context, the quality of the instructors and fellow students increasingly comes to the fore.

Another lesson that we have learned is that we do not need to own our students in order to educate them. Our student population has a long history of institutions telling them no, and not providing good reasons why not. We have tried to tell them yes, and to be part of a larger solution that they can craft working collaboratively with other institutions. In twenty years of providing supplemental educational programs for gifted students, we have found that it is often the most prestigious schools that have the greatest difficulty allowing their students to explore non-standard options. The primary obstacles are conceptual. Institutions, particularly those with reputations for delivering high-quality education, must recognize that admitting that students have needs beyond what their internal institutional resources allow them to meet is not a sign of weakness. It is an inevitable consequence of the rich diversity of student needs. Nor is bringing in outside expertise a sign of deficiency; rather, it is the proof of an institution's commitment to ensuring that its students' needs are met.

Finally, in writing this chapter, we want to stress that not all online education programs are the same. It is our hope that sharing specific models such as the one described here will help us move toward the future of education. As online learning continues to expand, it is important for researchers and practitioners to investigate and report to the broader community what is working and what is not.

Work on online education frequently highlights the obvious technological advances that make online instruction and learning appear wildly different from traditional approaches. The information we presented in this chapter, in contrast, shows that elements commonly accepted as key for student success in brick-and-mortar schools, such as excellent instruction and useful feedback, are equally important to students in a virtual and blended context.

Guidelines for Groups and Future Questions to Explore

In offering guidance to groups considering online learning or blended education, we would stress to keep in mind an attention to quality. Quality should not be conflated with publication values or technological merits but should focus on the quality of the learning that is achieved in the environment. This must take into consideration the teachers and students who will be using the tools, their comfort with the tools, whether the tools contribute to the learning, and so forth. Any time a new tool is introduced, there will be time spent learning how to use the tool—time that will not be spent on learning the material. This reallocation of time must be justified. In situations where students have no alternatives, the justification is a good deal easier than in situations where technology is being blended into the classroom. This problem is further compounded by the proliferation of options engendered by the ever diminishing costs of production, and also by the inherent difficulty in distinguishing between materials that look good and materials that produce the desired results. Ultimately, the question we must ask is whether the tool allows us to educate the students better than we could do otherwise.

Our experience to date with the Online High School underscores our long-held belief that online learning has ceased to be seen as a radical deviation and is becoming accepted as a normal component of education. This is most noticeable in the changing expectations of our students and parents. Twenty years ago, students were so eager to find anything that might address their needs, they were willing to put up with a great deal of inconvenience.

Even five years ago, when we began offering courses at OHS, our entering students were so eager for what we were offering that they did not even care if we were accredited. Five years later, they take the academic program and the online environment as given and begin to look for other things they expect of a top independent school. Increasingly, our focus turns to matters of counseling, extracurriculars, and other aspects that one expects to find in a school and which figure large in students' memories of their school. This raises questions about how the technology can be best used in this area. How many blended schools are doing all of their learning in a traditional classroom manner but turning online because of the rich depth of social interaction possible there? Or who have become blended because online learning is a more effective or more affordable way to foster a diversity of team sports? If our goal as educators is to provide an education, we must explore how this technology can be used to achieve that end in all of its splendor. We expect that we will find that just as the classroom has benefited from the blending of technology with traditional best practices, so too will the outside of the classroom improve. Only time will tell.

About the Authors

Raymond Ravaglia is the Associate Dean and Director of Stanford Pre-Collegiate Studies at Stanford University, where he oversees a number of online learning efforts at Stanford directed to K–12 students. Ravaglia has been actively engaged in online learning since writing the first online AP calculus course in 1990 and was the co-founder and executive director of Stanford's EPGY program. In 2006 Ravaglia created Stanford University's Online High School, a fully-accredited, diploma-granting independent school. Ravaglia holds BA and MA degrees in Philosophy from Stanford University.

Jan Keating has twenty-eight years of administrative and teaching experience including leading the top Charter High School in the country, Pacific Collegiate Charter School in Santa Cruz, California, and launching Stanford University's International Online High School. A pioneer in online education and expert in launching and leading high performing schools, Jan is a strong proponent of expanding student options through high quality online courses. Jan holds bachelors degrees in Chemistry and Biology from the University of California at Irvine, and a MS in School Management and Administration and EdD in Educational Leadership, Administration and Policy from Pepperdine University.

Lindsay Oishi is an educational researcher with expertise in assessment and evaluation across formal and informal learning environments. She is interested in enabling learners regardless of location, culture or background, and currently works for GlobalEnglish, an educational technology company owned by Pearson Education. Lindsay holds bachelors degrees from Georgetown University (Philosophy) and Oxford University (Psychology & Philosophy), and received a PhD in Educational Psychology from Stanford University.

SECTION SIX

Summary

CHAPTER

12

Lessons Learned from Blended Programs

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Blended learning is increasing in popularity as a pedagogical strategy in K–12 classrooms around the world. Some case studies and broad overviews of the field already exist; however, the purpose of this book was to provide deeper dives into existing programs. Such an exploration would provide lessons learned for those interested in such educational pursuits.

Given this goal, each program chapter included contextual and overview information to help readers set the stage for understanding the environment in which the blended program was implemented and then evolved. This matches a finding in each of the chapters and in the roadmap provided by Education Elements; namely, there are many models out there. Each model was created for a specific reason, an intended audience, and with other funding, policies, and structural factors in place. Readers should carefully understand each context before jumping to the implications and deciding a specific model is right for them. The rubric provided by Education Elements will help readers contextualize the chapters and decide if a model is suitable for their location.

Given this advance warning, the title of the book is *Lessons Learned from Blended Programs*. What are those lessons that were learned? A read of all the chapters provides insight into a) outcomes of existing blended programs, b) implications that programs have found in their own work, and c) lessons that can be gleaned from an examination of these programs. Here, "outcomes" refers to the intended and unintended consequences of building and implementing blended programs. These may or may not turn into implications (many outcomes also appear later as implications), but they do provide opportunities for further consideration and research by those interested in blended learning. Implications are suggestions directly stated by participants in the programs or obtained from a birds-eye view of all the programs represented in this book.

We have compiled here many of the findings and/or implications from the chapters. The goal of this conclusion is to help readers make sense of some of the broader issues within this field. Although specific quotes were taken from individual chapters to further demonstrate the points, a majority of these occurred in most, if not all, of the programs.

Outcomes of Implementing Blended Programs

1. **The use of blended programs resulted in increased—and often higher-quality—communication between school and home and in student-teacher interactions**. This finding will not surprise educators familiar with the educational technology or computer-mediated communication landscapes. Technology provides new access to teachers and to fellow students outside of the traditional, face-to-face classroom. Additionally, as content moves online, parents often have immediate access to the assignments and to the feedback provided to their students. This often results in increased communication between parents and teachers (compared to the yearly parent/teacher conference), as well as new opportunities for students to engage with the instructor through discussion forums, chats, Twitter posts, and emails.

   Outside of formal class time, SU OHS students participate in a rich array of interactions and activities. In this highly personalized learning environment, instructors work closely with students in individual directed study courses, homerooms, and informal counseling contexts to mentor students in the development of their academic interests and talents. Students in school clubs meet together with faculty advisors, student government officers decide on issues of importance to the student body, and students publish the school newspaper and yearbook. The annual school-wide graduation celebration at Stanford provides yet another opportunity for students to gather and connect. SU OHS students also have the unique opportunity to engage directly with the vast material and human resources of Stanford University. In our residential summer program, students work in Stanford's wet labs, libraries, and archives, and have the opportunity to meet with Stanford undergraduates, faculty, and admissions officers. (STANFORD—Ch. 11, p. 201)

   There has been some debate about the quality and effectiveness of relationships between teachers and students in virtual courses. Some have suggested that online interaction is less beneficial than traditional face-to-face interactivity. Our experience tells us that the emergence of new communication devices, software, and online tools has actually produced stronger school-to-home communication and increased the frequency and quality of

feedback between teachers and students. Even our concurrent online teachers (those who teach online and in the traditional classroom environment) report that teacher-student communication is more frequent and more productive than that which they experience in their brick-and-mortar classrooms. Likewise, student survey data indicate that online learners experience a higher rate of contact with online teachers than they do with teachers on their comprehensive school campus. Students email, text, and chat with their teachers without regard to the school's bell schedule. Survey data indicate that student feedback from online teachers is more personalized and specific than they are used to on campus. Online teachers report that they feel substantially more aware of the needs of individual students in the online courses than those in their physical classes on campus. (RIVERSIDE—Ch. 3, p. 43-44)

2. **The development and implementation of blended programs resulted in initial apprehension or increased scrutiny by outsiders**. Completely online programs were the first to face this trepidation and/or scrutiny. This intense examination has led everyone from policymakers to researchers to question the efficacy of face-to-face vs. online learning. Much of this scrutiny obviously relates to funding. Face-to-face programs are often concerned that money will be taken away from them to support online programs. A second concern revolved around the role of the teacher, with school unions arguing that online programs were going to replace teachers with technology. A third concern is obviously the newness of the program and people's unfamiliarity with online and blended instruction. Outsiders are often unsure of what it is or how it works. All of these concerns are somewhat lessened with blended learning as the programs are often located in brick-and-mortar buildings, they require teacher involvement, and they work hard to build community partnerships. However, the programs represented in this book were not strangers to close examination. In response, many of them have developed or are continuing to search for core metrics to demonstrate efficacy. The programs also spend time frequently addressing stakeholders' concerns.

   In the short time before the 2010–2011 year was to begin, ACCESS staff also needed to publicize the program and recruit students. The partners reached out to high school counselors throughout the district to alert them to this new alternative for PCGCS students. The initial reaction was somewhat lukewarm—despite the growing popularity of online learning in other states and some experience in PGPCS with Maryland Virtual Learning Opportunities, the state's limited online clearinghouse program, counselors were slow to embrace the ACCESS approach to blended learning. Initial applications for student participation were sparse but increased rapidly over the year as juniors and seniors across the district got word of the program from peers and counselors. (CONNECTIONS—Ch. 4, p. 63)

   Even though many KEA parents expressed some reservations at the start of the school year about the larger class sizes, by the end of the year, the parents of KEA students were totally sold on the blended learning program. Not surprisingly, many parents were concerned that their children would be in classes of 28 students. However, because they were familiar with the budget woes in California and knew that districts across the Golden State were being forced to increase class sizes to make ends meet, they understood that boosting class sizes was necessary. Yet, their fears were allayed when I showed them how their children will always be taught in groups of 14 students or fewer in the core subject areas. After seeing how intimately their child's teacher got to know their child and how much their children had achieved in just one school year, KEA parents ended the year

extremely satisfied. In fact, on the Healthy Schools Survey, overall parent satisfaction was 4.71 at KEA, compared to the national KIPP average of 4.36. (KIPP—Ch. 6, p. 117)

3. **Blended learning implementation was successful**. An outcome of blended learning is that student test scores and/or course performance improved, as evidenced by the data presented in these chapters. Success, however, needs to be further defined. First, success was related to multiple programs that had specific reasons for creating their blended programs, and these multiple programs had various contexts, differing in grade level, oversight by public vs. private organizations, and technology used. This diversity reinforces the point that blended learning *can be* successful, but it does not mean that it *will always be* successful. One should always *ask, under what conditions were these programs successful*? Second, success is often preceded by failure. In each of the program stories, you will find instances where things did not go as planned, times where plans required iterative design based on feedback and/or data, and occasions where negative outcomes resulted in changes in policy, curriculum, professional development, personnel, or technology. To read these stories and not recognize the need for constant growth, evolution, and self-analysis is as dangerous as not understanding the context in which these programs emerged.

   In 2009, five of our seniors (30% of the graduating class) matriculated to Stanford University. Our graduates have also been quite successful in gaining admission to the top-ranked University of California campuses. In the future, we intend to systematically track the progress of our graduates in their first year at the university level to determine the efficacy of our curriculum and instruction relative to success at the post-secondary level. (STANFORD—Ch. 11, p. 204)

   Since 2009, when RVS school-wide achievement data was initially reported by the state, RVS has beaten the state Academic Performance Indicator (API) target of 800. RVS has also topped the overall district API for 2009, 2010, and 2011. RVS student performance on the California High School Exit Exam (CAHSEE) consistently exceeded both the district and state-wide averages for 10th graders (the grade level where the first administration is offered at high school). One-hundred percent of RVS 10th graders passed the English Language Arts portion of the CAHSEE in 2011, and the mean scaled scores for RVS students (all grades) were 400 (out of a possible 450) in ELA and 381 in math. RVS has met or exceeded the Academic Yearly Progress (AYP) targets in both ELA and math during each reporting year since RVS scores were first reported in 2009. (RIVERSIDE—Ch. 3, p. 51)

4. **Implementing blended programs means changing relationships with content providers**. In many traditional, face-to-face programs, textbooks were and still are used. For years content providers knew the platforms by which their content would be delivered. Authors of chapters in this book quickly realized that changing their delivery platform, their curricula, the personalization of instruction, and their classroom structure/schedule entailed needs and requirements from content providers that they may or may not have been ready to provide. Many content providers are quickly recognizing this changing landscape and are attempting to respond. However, implementing blended instruction has meant and will continue to mean changing needs—and perhaps a changing relationship—with content providers.

   Too much of the work in online learning has been driven by the limited vision of education propounded by textbook publishers and systems companies. The common thread uniting

these groups is a view that equates education with the dissemination of content knowledge. While one can understand where this attitude comes from, and why certain parties would promote it, it fails to capture core facts about what an education is, namely learning how to do certain things (write, argue, analyze) in a variety of contexts. (STANFORD—Ch. 11, p. 217)

The question I ask content providers is, "What can you provide students that they cannot get for free somewhere else?" I believe this new reality is driving publishers of content into a new space in which they must market wrap-around services for students, teachers, and parents. Like schools, publishers have to clearly identify and articulate what value-added effect they bring to the learning transaction. This is particularly true in an environment where savvy students and parents are accessing MIT classes via iTunes U or finding help with learning math and chemistry from Sal Khan and his friends. (RIVERSIDE—Ch. 3, p. 52)

5. **Blended learning implementation requires flexibility**. Successful teachers often comment on the importance of flexibility in instruction. They talk about the *teachable moment*; they are praised for their ability to adapt the curriculum or the daily lesson to meet the remedial and advanced needs of students. In our own technology research, we have provided evidence that the same is true with technology. Educational technologies that are flexible provide opportunities for teachers to be flexible. Unfortunately, it seems that many technology plans are rigid in their design and their implementation. An outcome that is evident in each of these chapters is the need for consistent change. Blended learning has required parents, teachers, students, and administrators to consistently examine the process and to make changes when necessary. However, schools are often so focused on the yearly summative evaluations that drive the curriculum choices for the following year that immediate formative change is off their radar.

   One of the most difficult aspects of starting a blended learning program for primary-aged students is that there is a dearth of choices of online content. Because most online content providers have targeted secondary-aged students, KEA was forced to use whatever it could find that would have enough content to sustain roughly 30-minute online sessions in reading and math each day. As a result, KEA could not find an online content provider that would allow teachers the ability to alter the scope and sequence of skills the students experienced each day. Therefore, the computer-based instruction did not always tie directly into what the students were learning with their teachers. Thus, students were largely on a parallel track on the computers. While this was lamentable, KEA did feel that the adaptive learning programs that were chosen still provided students with instruction at their level, boosted their skills, and provided sufficient data that could still inform teacher-directed instruction. (KIPP—Ch. 6, p. 116)

   Planning, implementing, and managing change within blended learning is a major focus of a BLAST administrator. ATAMS is a dynamic environment and requires dynamic processes, people, systems, and culture. With this in mind, we established a specific ATAMS Support System that embodies a) a focus on detail for establishing and measuring delivery of immediate actions; b) communication methods that enable immediate review and decision making; c) the empowerment of teachers and students to make decisions at a local operating level; and d) the adjustment of recruitment and training to ensure that stakeholders contribute positively to the culture of empowered dynamism. (ALLIANCE—Ch. 7, p. 133)

6. **The move to blended learning has increased the availability and form of technology-based instruction**. Many K–12 online learning programs began as "X Virtual High School," especially the supplemental programs. These names were clearly based on the audiences they served when these early supplemental online programs only served high school students. As the years progressed, schools and supplemental programs began serving middle school students, with some beginning as early as grades 4 and 5. However, moving into early elementary was seen as almost impossible, mainly due to literacy limitations among students and the related heavily text-based content in the courses. Children needed to be able to read and write to interact with solely online programs. The exceptions have been the targeted full-time online elementary programs, many of which rely on parents as partner-educators. Three of the programs in this book serve early elementary students, demonstrating the importance and scalability of reaching students at all ages and grade levels. Another program provided supplementary course options for high-achieving students to remain at their local school and still have access to advanced curriculum. The move to blended programs provides opportunities for all students to learn in this medium and for the online experience to take a range of roles from enhancement to full course.

   Following Danner and Smith's leadership, Rocketship Education is building a national network of high-performing urban college-preparatory elementary charter schools. Rocketship's mission is to eliminate the achievement gap in public education by proliferating its network of K–5 charter schools in high-need neighborhoods throughout the country. Each Rocketship school has a clear and simple goal: that their students achieve grade-level proficiency by the time they graduate from elementary school. (ROCKETSHIP—Ch. 5, p. 76)

   For the 2012–2013 school year, KEA serves 232 kindergarten, first, and second grade students, and will add one grade each year until it reaches capacity in 2014 with 550 students in kindergarten through fourth grade. In order to recruit as many under-served students as possible, KEA targets local preschools and Head Start facilities that serve predominantly low-income families, instead of solely relying on advertising. (KIPP—Ch. 6, p. 106)

7. **The shift to blended learning has highlighted the critical role of the teacher**. As stated previously, many online programs were attacked for supposedly trying to devalue the teacher. In the minds of many critics, technology was going to replace the teacher. However, in each of the chapters presented in this book, technology was shown to reinforce the need for the teacher as a key facilitator and differentiator for each student. Almost all of the programs highlighted the need for not just the teachers, but also for professional development for the teachers and the need to hire high-quality instructors. In blended learning (like online instruction), technology does not replace the teacher. Instead, it provides new opportunities for learning relationships between the teacher and the student, placing increased value on the role of the teacher. Perhaps what proponents should say is that technology is devaluing the role of the *traditional* instructor *and* replacing it with the need for flexible, reform-oriented, pedagogically sound teachers who instruct as well as guide and coach our students.

   The blended education model extends and enhances the valuable role that teachers play in education (a job should not be lost because of technology). It changes the classroom dynamic, enabling teachers to do more of what they love (teach). It allows teachers

to focus on areas of pedagogy, such as lesson planning, emphasizing overarching objectives that have a higher impact on student learning. (THESYS—Ch. 8, p. 162)

While the teacher is an instructor and monitor during the BLAST model, the central focus is on individualized and data-driven instruction. Teachers in the BLAST model personalize instruction by reviewing data through content providers while adjusting lessons, feedback, and concerns to intervene on struggling students. Teachers plan their weekly lessons on the digital agenda template. Teachers then upload the agendas, supplemental materials, and guided directions to an integrated platform. The digital agendas are color-coded to match the colored desk numbers. If a student is ever confused as to what to do, they simply look at their desk number and look for the assignment in the corresponding color. When students are struggling to grasp the concept in class, the teacher may have the rotational group slow down and have the students go at their own pace, or repeat a station if there are any concerns. (ALLIANCE—Ch. 7, p. 132)

8. **The implementation of blended learning has changed how schools work**. Moving to blended learning often has unintended and yet potentially positive consequences. For instance, most schools could not afford or justify offering courses with low enrollments. The move to online and blended instruction has provided opportunities for giving students remedial and advanced courses, regardless of the number of students enrolled. This can be positive pedagogically; it can also change the culture of a school, allowing it to be more responsive to a wider range of student needs by offering courses that might never have been available. However, schools need to be prepared for the challenge associated with unintended consequences of new and/or increased enrollments.

Another opportunity that blended learning provides is some flexibility in scheduling. Bishop Kelly is a small high school that offers a large high school curriculum. Rather than offering one section of Advanced Placement (AP) Economics and one section of AP Calculus and trying to match students' schedules to fit these offerings, AP curriculum for the classes could be provided online. For example, students would register for an economics class, and then they would decide if they wanted the AP designation on the class. If students did desire the AP designation, the additional requirements could be an online component to the class. (BISHOP KELLY—Ch. 9, p. 169)

The effect of the growing number of single course enrollments on the school culture has yet to be determined, but a few preliminary observations are worth mentioning. Most instructors could not specify which of their students are taking a single course based on performance or attitude, which suggests that single course students are very well integrated. Students enrolled in single courses also actively participate in extracurricular activities, such as school clubs. Indeed, a member of our nationally ranked JETS Design Team was a student enrolled in a single SU OHS course. The addition of talented students to our student body, regardless of the number of classes in which they are enrolled, appears to only enrich our school; however, we do intend to monitor this trend and its impact on our school culture over the next few years. (STANFORD—Ch. 11, p. 205-206)

Implications Offered by Blended Programs

1. **Implementing a blended program takes courage and support**. Any motivational speaker or any self-help book will highlight the importance of courage. They argue that nothing good ever comes easily; it required someone who was willing to swim upstream. The nine program chapters presented in this book highlight successful programs, where success is defined by the data they included. The *roadmap* chapter provides a rubric to help make the transition and to pick the right model. However, just because a blended program model worked for someone else does not mean it is easy. In order to be successful, these programs needed courage in the face of initial failures and occasionally the lack of public or even internal support. Finding support structures within the school and the community helped these innovators navigate rough terrain.

   > *As the person charged with overseeing these programs, I have been fortunate to have the support and active engagement of the district superintendent, as well as members of the RUSD Board of Education and the Superintendent's Cabinet. Over the past few years, we have walked forward a comprehensive vision for blended learning and hybrid school programs that has been embraced by school administrators and board members within the newly adopted technology plan. (RIVERSIDE—Ch. 3, p. 50)*

   > *Policymakers are interested in the analysis of blended learning programs. This model provides a new educational viewpoint to all interested parties. If the model proves to be financially superior to a traditional classroom structure and better for student achievement, the BLAST model may be able to turn a positive spin on the current education structure. The main concern in this model is the rise in the initial investment to increase savings over time, specifically producing savings to invest in new BLAST schools. Policymakers have a significant part in the structure of ATAMS because of the financial and emotional support that they provide the students. The policymakers produce the opportunity. (ALLIANCE—Ch. 7, p. 144)*

2. **Successful programs became successful and demonstrated success through internal and external research and evaluation**. There are a number of reasons to evaluate one's own work. First and foremost, it can provide metrics by which one can demonstrate growth and/or areas that need improvement. Evaluation leads to knowledge of effective practices that should be replicated; it provides evidence on what is less effective and in need of change. Second, it provides opportunities for dissemination of knowledge. Publication of ideas and innovation—through journal articles, white papers, conference presentations, and legislative reports—can actually provide increased support for programs. Early online programs were often leery of being poked and prodded by researchers. Those feelings were understandable, as some researchers seemed more interested in the data than in helping the programs grow. Others were interested in using the data against the programs. However, more recently, there have been numerous examples of collaborative partnerships between program administrators and external evaluators who have objectively supported the growth of the programs. These examples highlight broad understandings about blended learning and about strengths and weaknesses of individual programs. These program administrators have found that it is much better to find their own weaknesses

and turn them into strengths than to wait for someone else to discover them. Additionally, when the strengths of a program were reported, increased support often resulted.

> *One hour of release time was provided each month for the PLCs to work together. One PLC was designated to look at making blended learning effective in the school. The fact that there was a PLC built around the issue of Blackboard/blended learning shows that teachers wanted to take ownership of blended learning and work through some issues. The PLC decided to address course organization as the first issue because they were encountering problems in their classes with this issue. The group asked for screenshots of all teachers' Blackboard classrooms, and then they compiled a suggested list of which buttons should be standard in the classes. The teachers still have the option of choosing how to set up their classes, but this template was presented as a guide to help standardize the layout. (BISHOP KELLY—Ch. 9, p. 175)*

> *To understand the potential impact of a blended course on student outcomes, the summer 2010 results were compared to the "next level" course in the first semester of the 2010–2011 school year (for example, if Algebra I was taken in the summer for advancement and is a prerequisite to Geometry, then those student outcomes were measured against their performance in the following Geometry course the next semester). The same grade was defined as +/- a half grade in the next level course (e.g., a B and B- are the same), and better or worse differs by a full grade or more (e.g., B to A is better and C to D is worse). The results indicate that students were able to successfully continue their learning after taking a blended course, as 79% of the students got the same or better grade in the "next level" course. (THESYS—Ch. 8, p. 155-156)*

3. **Going blended means a continuous exploration of tools**. The digital divide—the differences between the haves and the have nots—is still very much alive. However, many technologies are now ubiquitous across socioeconomic status. The digital divide therefore might also refer to the technologies students use at home versus what they use in school. They arrive in school and rarely have access to 1:1 computing; many are told to put their smart phones away prior to the start of class. Then they go home to 3D televisions, high-speed Internet, social software, tablets, smart phones, and video game systems—many of which support formal and informal learning. It seems cliché to say that technology changes rapidly. However, blended programs must continually examine technologies, both for their ability to engage students and for the characteristics that make them useful for delivering content.

> *Alliance BLAST schools operate differently from traditional district and Alliance schools. Significant factors for the instructional model are inside the main schools' operations. ATAMS utilizes blended learning to make the most of the technology at hand. Blended learning is a "marriage" between online and offline content, data, and instruction. The beauty of the model is its flexibility for each student. During its first year in operation, some students embraced the technology fully, favoring typed notes to written notebooks and digital content videos to chapters in a traditional text. Other students preferred more traditional assignments and poster projects versus PowerPoint presentations and Prezi online presentations. The strengths of both types of students are acknowledged at ATAMS, while teachers also push students outside of their comfort zone. A well-rounded, college-ready student is comfortable and familiar with modern technology and can still take on less desirable roles with confidence. (ALLIANCE—Ch. 7, p. 135)*

ACCESS students reported that they participated in their courses in the learning labs, at home, in the community, and at their base schools—and then asked for mobile access as well. Given the ubiquity of technology in these young people's worlds, combined with the continued development of content and instructional support that can live "in the cloud," emerging definitions of blended learning should focus less on the either/or combination of face-to-face and online and more on the vision of learning blended into all aspects of our lives. (CONNECTIONS—Ch. 4, p. 73)

4. **In blended education, as with all teaching and learning, technology does not replace pedagogy**. Blended programs must continue to explore technologies. However, this does not mean that pedagogy should disappear because of the new technology. An excellent example of this is the instructional use of video games. Video games are attractive because they are ubiquitous and motivational. Research has provided evidence that they can be used successfully in teaching and learning. That has led many educators to attempt to adopt them, without a thoughtful understanding of the pedagogical strategies in using them. For instance, educators often fail to consider the student and teacher development, rather than just consumption, of such games. Blended education provides access and opportunities to use multiple new technologies. However, just because a technology is new and popular does not mean it is easy or appropriate to implement in education. Pedagogy must always be considered.

   Another balance is the tool (Blackboard) versus the teaching. The focus of schools is teaching and learning. Blackboard and Web 2.0 tools should be used in the pursuit of teaching and learning, not just to be used. Since there was a rubric of expectations for teachers, many teachers began to use Blackboard as a content repository, to post their handouts, etc., rather than a place for learning. Learning has to be the primary focus. (BISHOP KELLY—Ch. 9, p. 179)

   True, impactful, blended learning is not as simple as adopting a few online content providers and relegating an hour of student instructional time to a computer lab. It is also not as simple as issuing iPads to all students or installing Smart Boards in every classroom. While great support tools, these tools need a well-designed instructional plan to support. Despite the many technology innovations being launched in the 2012–2013 school year, Rocketship's model is not about having the latest and greatest technology. It is about using accurate, relevant data and well-designed Individual Learning Plans to create a variety of instructional experiences that best meet the needs of each student.

   Design the instructional tenets first and then find the technology and curriculum that support the vision. So much of Rocketship's success in student achievement scores came long before the technology innovations that are being launched this school year, which proves that, while technology is a critical tool and support of blended learning, it is in no way the foundation and core. (ROCKETSHIP—Ch. 5, p. 100)

5. **Stakeholders are often interested in choice when it comes to blended instruction**. Choice here means many different things. It refers to the delivery mechanism. Stakeholders such as parents and community members often want to see face-to-face and completely online instruction, in addition to the blended opportunities. Choice also refers to the audience of families that have become frustrated by seeing technology-based classes that are limited to secondary students. The actual content available

is one of the most notable choices; some schools focus on core courses in blended programs, while others use blended and online approaches to offer a wider range of curriculum. Finally, choice may refer to the model of program being used. Certain models have greater opportunities for parental involvement. Other models have more homework or more technology interaction. Administrators of successful programs have recognized and often asked stakeholders about these multiple aspects of *choice*.

> *The move to blended learning in 2007 was made at a time when the state of the economy was forcing many Catholic schools across the country to close their doors. Bishop Kelly made this investment of time and money in order to further distinguish the school as a thriving academic institution. The move was made to ensure that the instruction at Bishop Kelly was in line with best educational practices in the 21st century. (BISHOP KELLY—Ch. 9, p. 167)*

> *The rapid evolution of the ACCESS program to include both full-time and supplementary offerings reaffirms the need for the kind of universal access to online/blended learning long promoted by organizations like the International Association for K–12 Online Learning (iNACOL). District leaders in PGPCS are now considering multiple full-time blended charter schools (fully virtual charter schools are prohibited in Maryland), while also looking for ways to expand ACCESS as a source of courses for students headed for graduation. Other districts may find it useful to embrace this portfolio approach to online/blended learning opportunity. (CONNECTIONS—Ch. 4, p. 72)*

6. **It is critical to understand the value of school culture**. Change does not occur in a vacuum. Change literally means an adaptation or evolution of something. Although it sounds elementary, many innovators ignore the existing culture of a school or community as they attempt to implement a new approach. An important piece of advice from successful blended programs is to understand the existing culture and to try to use that culture in your favor as you begin developing blended models. Even in new schools that are not tied to existing programs, evaluating and understanding the culture of the education community is critical to success. Appreciating existing beliefs, practices, and structures is a key to successful implementation.

> *There may also be value in sharing what KPS administrators and teachers learned from this initial foray into blended instruction. First, and probably most importantly, the project was consistent with the culture of the district. The pilot arose from the core directive and exemplified the values of the district; users informed its design. Because the district administration empowered its teachers to respond in the best interest of their students, the design was also flexible, and it did change in the first few months of the class. (KENTWOOD—Ch. 10, p. 192)*

> *In order for blended learning to be successful, the teachers need to believe in the idea. Teachers are on the forefront in working with students, and their attitudes shape students' attitudes. If teachers complain about having to incorporate technology, students will complain and think that it is unfair and unnecessary. Teachers need to understand the long-range vision for what blended learning can be and do in the school. There are teachers on the Technology Committee and teachers involved in the Strategic Planning process, but teachers need to be part of the ongoing development of a blended program. They should have been involved in the development of the rubric and other aspects of the vision for blended learning because they are such an integral part of the success of blended learning. (BISHOP KELLY—Ch. 9, p. 178)*

7. **Blended learning implementation, like all good innovation, requires iterative design**. Iterative design here means to consistently review plans and procedures. An outcome or result demonstrated by the chapters is that the programs needed to have flexible plans. In the implications sections of many chapters, the need for iteration in their programs was highlighted. Two factors support this process. First, the program administrators needed data to understand what was going well and what needed to be changed. However, simply having data did not lead to positive growth. As a matter of fact, online and blended programs often have so much data that it is confusing. Having data, organizing that data, and putting it into formats that are easily reviewable can lead to decision making that benefits the organization. A second factor is time. Having data and reviewing it once a year does not lead to fast enough response in the need for adaptation. Program administrators should rely on both summative *and* formative assessment.

   > *In recognition of the fluid nature of ACCESS enrollment—with some highly motivated students tackling multiple courses and completing them in less time than the traditional semester, while others discover missing credits in the last few months of the year—the partners agreed to shift to a seat-model for tracking program capacity. The 2011–2012 ACCESS program accommodates 300 seats—simultaneous enrollments—with multiple students using any one seat over the course of the extended academic year. This shift is expected to increase program capacity without increasing cost for the district. (CONNECTIONS—Ch. 4, p. 69-70)*

   > *One of the greatest strengths for Rocketship has been the ability to reflect, evaluate, and refine. The Rocketship Public School Model has gone through significant changes in many elements since first launching in 2006. Everything from bell schedules to online content is evaluated regularly for effectiveness and the ability to support strong student achievement. The leaders and team in a new program must be willing and able to assess risks, mitigate when possible, and adjust and refine when things do not seem to be serving students. (ROCKETSHIP—Ch. 5, p. 101)*

8. **Blended learning isn't a panacea for all educational problems nor is it, in and of itself, problem free**. Program administrators were fast to point out that just because blended learning can work, it does not mean that it will work. The programs included in this book described a thoughtful process of implementation that reflected needs or opportunities within the educational programs of their districts or states. None of the programs was developed with the hope or goal of fixing every educational problem that existed. Additionally, the implementation of blended learning came with its own set of new problems, opportunities, and questions that need to be answered.

   > *KEA does not view blended learning as a panacea because there is so much more that makes a great school than simply the use of technological innovation. It is feared that school districts will blindly implement blended learning models in the hope that they will achieve significant gains in student achievement. Therefore, while KEA is hopeful for what a blended learning model can do to facilitate fiscal solvency and enhanced student achievement, it does so knowing that several factors contribute to a school's greatness—and none are more important than the quality of instruction. (KIPP—Ch. 6, p. 118)*

SU OHS began with a small instructional and administrative staff necessarily attuned to the mission and vision of the school, as well as to the needs of a new and growing school. This staff worked together closely to envision and begin to implement a school capable of realizing these goals. As we transition to a larger school, taking on additional instructors and accordingly reshaping our leadership apparatus to preserve instructor time and retain an effective decision-making capacity, we have and will continue to face challenges of communication and shared understanding of central points of mission and practice. (STANFORD—Ch. 11, p. 216)

9. **Blended learning required the adaptation of existing roles and the development of new roles**. In describing the lessons learned, the personnel involved in the implementation were often discussed. In many cases, these personnel were new to the district or the organization. For example, project managers might not have existed in the past infrastructure, but the new role was critical for many programs to provide assistance instead of heaping new responsibilities on often overworked administrators, instructors, or technology support staff. Success was not just related to new roles, however; it also required changes to existing roles. For instance, administrators in some programs demonstrated support and leadership by participating in their own blended learning professional development. Successful teachers understood their changing roles and explored the use of the technologies and what they could offer pedagogically, rather than simply forcing their old pedagogy onto a new innovation. Professional development was key to both new and existing roles, helping staff understand what was available and how they could envision and re-envision 21st century digital education.

   KPS was able to provide an opportunity for two newly certified professionals to begin their careers as interventionists. Though this model may challenge the status quo, it offers the flexibility to take full advantage of technological innovations and respond to current financial constraints. Districts must find ways to do more with less—any other approach is simply wishful thinking and fantasy. The cost for the two interventionists, combined, was less than half the annual cost of just one teacher. Both interventionists were highly qualified content experts. Their different personalities and teaching persona offered students greater opportunities to bond with an adult in the classroom. (KENTWOOD—Ch. 10, p. 192-193)

   Although the blended aspect of ACCESS was driven partly by the Maryland state requirement of 20% face-to-face instruction, the program has very intentionally developed critical, complementary roles for the in-person and online teachers. Program stakeholders believe that ACCESS outcomes have been positively impacted by the face-to-face Partner Teachers' energetic commitment to "the whole student," while the program platform facilitates data-driven collaboration between those teachers and their online, subject-focused counterparts. One important impact of blended learning should be that these various aspects of teacher best practices can be distributed and scaled to maximize student achievement. (CONNECTIONS—Ch. 4, p. 72)

10. **Blended education provides multiple opportunities for learning**. Students enrolled in blended courses learned more than just the content. They learned life skills such as time management. They learned about themselves, re-examining their study habits and their personal learning choices and styles, and they learned new technology skills, such as online communication and learning management systems. This implication sounds like an outcome or a result; however, many schools listed this as an implication because it is not something

that happened automatically. Schools were purposeful in helping students become meta-analytic and meta-cognitive about their learning by highlighting the importance of various learning styles and technology skills. They implemented opportunities for students to focus on life skills while learning the content, and they made choices that provided students with opportunities to learn the content in different ways. The implication is to create opportunities for this to happen as it can be a very positive consequence of using the blended environment.

> *Because the students progressed at their own pace—with no one waiting for others to catch up and no one becoming lost while the larger class progressed to the next lesson—Emeott and the interventionists had more time to interact one-on-one with each student. Emeott said, "I had the luxury of spending the entire class period with one student if he needed my help. I could bring in parents, and we could work together to help a student become more successful—not just in Geometry, but in school and maybe even in life." (KENTWOOD—Ch. 10, p. 190)*

> *Rocketship aspires for students to graduate from fifth grade at Rocketship on a new trajectory. Due to the enduring academic and personal growth they experience at their schools, Rocketeers are well placed along a path to expanded opportunities in middle school, high school, college, and life. As scholars, Rocketeers master basic skills and also build higher-order thinking skills above grade-level expectations. As citizens, Rocketeers strengthen the values, dispositions, and life skills that will support their hard work and future success. Rocketship believes that these two areas of growth—academic and personal—are mutually reinforcing. Academic growth accelerates when students have strong personal values and display traits such as resilience and love of learning; these characteristics are also built up and reinforced in the pursuit of rigorous academic goals. (ROCKETSHIP—Ch. 5, p. 95-96)*

Meta-Lessons Learned

1. **There are multiple models of blended learning; not every model is right for every situation**. In examining all the models presented in the programs and the *roadmap* chapter, two things become quickly evident: 1) the programs were successful, and 2) the programs are different. The reason we asked authors to include the context of their programs is that without context and history, a reader would not be able to understand why a program was created, why a particular model was chosen, or why success occurred. After examining this book, it should be clear that the environment of a school should be considered before deciding on a model for a new program.

> *While the isolated-student, enrichment-focused approach was both sound and appropriate for our target population, it had shortcomings when applied to an institution for full-time secondary education. First, there are major differences between taking a single course for enrichment and pursuing a complete course of study, which have important consequences for course design, program sequencing, and academic counseling. Second, we had learned from students that one of the most valuable features of academically advanced programs is not the content alone, but also the invigorating experience of learning in a cohort comprised of like-minded students with similar abilities and with an outstanding instructor. These two insights made us commit to the synchronous, seminar style of instruction for all courses at OHS, instead of the more traditional asynchronous, student-directed approach that was used at EPGY. (STANFORD—Ch. 11, p. 198)*

Partly as a result of this change in statistical approach, PGCPS made Education Week's *list of "dropout epicenters," 25 school districts that, together, accounted for one of every five "non-graduates" for the class of 2011 . . . In response to the district's call for partners in early 2010, Connections proposed a blended learning approach that combined high expectations with flexibility of time and place. Up to 60 full-time students would benefit from face-to-face staff guidance in a physical "learning center" provided by the district, as well as 24/7 access to top-notch online curriculum. Students would be able to earn their way to more virtual, anytime-anywhere engagement through good attendance and performance, rather than having to report daily to the learning center. Expert online teachers would collaborate with face-to-face staff to accommodate student needs. The entire program would be tied together with a constant flow of learning data to permit dynamic differentiation. (CONNECTIONS—Ch. 4, p. 61-62)*

2. **Professional development is critical to successful blended learning implementation**. Professional development is key to any technological implementation, yet it is one of the most overlooked and underfunded activities. As evidenced in each of these programs, blended instruction required not just new knowledge but also a deeper understanding of a new role. Teachers, administrators, and even students and parents needed support in understanding the tools and the pedagogy behind the tools. To fail at professional development is to leave participants unscripted and helpless. It is also worth noting that professional development is not a one-time event—it needs to occur throughout the process.

   Professional development is important. Individual teacher training had the most profound effect. After visiting a classroom or after a teacher evaluation, specific recommendations to that teacher about what could be enhanced through technology were more helpful than a punitive rubric or generic ideas presented to the entire group. (BISHOP KELLY—Ch. 9, p. 178)

   Weekly professional development meetings are the foundation for success at ATAMS. Students are dismissed two hours early on Wednesdays, and teachers spend the time in a professional workshop designed with the sharing of best practices as its central focus. In a traditional school, professional development meetings are structured like a typical classroom, with school administrators assuming the role of teachers and the teachers themselves taking instruction. At ATAMS, however, administrators take on a facilitator role and teachers take turns sharing their struggles and triumphs throughout the previous week. Best practices are developed and modified to fit different content areas or different grade levels. Graphic organizers that made a hit in the English department are emailed to the group and customized for the math classes. This culture of sharing and continued growth is what ATAMS refers to as "Action Research," where learning and change happen in real time, as necessary (Figure 7-3). ATAMS administration takes a hands-on approach to professional development, reaching out to schools that are interested in transitioning to the BLAST model and offering both in-person and virtual professional development with seasoned BLAST teachers. (ALLIANCE—Ch. 7, p. 129)

3. **Blended learning does not look the same throughout, even within the same model**. A common misunderstanding is that within a blended model, every content area and every grade level looks the same. Nothing could be further from the truth. Although this is a topic that deserves more research, certain content areas might require more or less face-to-face instruction. For instance, chemistry might require more lab time than other courses that do not have physical object manipulation. Elementary students might require more hands-on support

than older students. This obviously points back to the need for flexibility in development and implementation; it also highlights the need for iterative design, based on data and feedback from users. The balance between online and face-to-face activity may be a trial and error method, supported by research for consistency, and focusing on the content, the user, the technology, and the other participants involved. Sharing these outcomes between instructors and content developers, both within and between schools, is another critical component.

> *Despite having a great deal of success in its first year, the administration and teachers of KEA are continuously learning and making adjustments where and when needed. Because there are so few blended learning programs for primary-aged students, KEA is constantly evaluating our instructional program and making improvements as we continue to evolve over time. If more primary schools decide to adopt blended learning, my team and I would be thrilled to have their administration and teachers visit our campus and act as thought partners with whom we can share ideas. Until then, KEA will continue to assess: 1) what the appropriate amount of computer time is for primary-aged students; 2) how to best utilize and support teachers in the blended learning environment; 3) whether it is better to integrate the online learning with class instruction or to maintain a parallel track where the online adaptive learning is separate from in-class instruction; and 4) how best to maximize the role of the computer as students move into the upper elementary grades. (KIPP—Ch. 6, p. 119)*

> *Thesys and FPA conducted their first blended courses in the summer of 2010. Based on the learning from this program and other research, Thesys began development of its own courses. Using the models described in* The Rise of K–12 Blended Learning *(Staker, 2011), Thesys and the FPA developed digital curriculum as follows.*

1. *Fixed Schedule (aka "hybrid") - 17 College Prep (CP) and Honors (H) level courses:*

    a. *English I, II, III CP*
    b. *US Government CP*
    c. *World History CP*
    d. *US History CP*
    e. *Economics CP*
    f. *Chemistry CP, H*
    g. *Biology CP, H*
    h. *Algebra I CP*
    i. *Algebra II/Trig CP*
    j. *Geometry CP*
    k. *Pre-Calculus CP, H*
    l. *Health*

2. *Flex schedule - 90% Online with Teacher on-site 10% - 10 Advanced Placement (AP) level courses:*

    a. *Chemistry AP*
    b. *Biology AP*
    c. *Environmental Science AP*
    d. *Physics B AP*
    e. *Physics C AP*

f. *Calculus AB AP*
g. *Calculus BC AP*
h. *Statistics AP*
i. *Macroeconomics AP*
j. *Microeconomics AP*

3. *Online (100%) - English as Primary Language*

    a. *Basic, Beginner, Intermediate, Advanced levels (THESYS—Ch. 8, p. 151-152)*

4. **The blended programs represented in this book provide evidence that all students, regardless of socioeconomic status, age, race, gender, or ability level, can succeed in blended instruction**. However, this does not mean that simply offering blended instruction equates to success at all levels. The programs discussed show evidence of going the extra mile to meet those students that might otherwise be disadvantaged—either by the school system or by the move to blended instruction. For instance, schools may need to provide extra technology access in the form of laptop borrowing or extended lab hours for those students who do not have home computers or other forms of access. Students in special needs programs might require different pacing, more support personnel, or different technologies to succeed.

    Low-income students who reside in the city of Riverside are referred to SmartRiverside's Digital Inclusion Program, which provides wireless computer resources for access to online learning resources. In cases where families do not qualify for this program or live outside of the city, they are informed of local, community-based programs (e.g., libraries, youth organizations, and community centers) with accessible computer resources. We are committed to working with local agencies to develop strategies for ensuring student access, including promotion of open access policies that encourage student use of personal learning devices brought from home and those checked out from school. (RIVERSIDE—Ch. 3, p. 42)

    Students who attend KEA hail mainly from the neighboring Los Angeles communities of South Central, Crenshaw, Inglewood, and Compton.

    Roughly 85% of KEA students are African American and 15% are Latino. Ten percent of students receive special education services and another 10% are English Language Learners. Ninety-two percent of KEA students qualify for free- or reduced-price meals. (KIPP—Ch. 6, p. 106)

    Across the Rocketship schools, serving approximately 500 students each, over 90% of students receive free or reduced-price lunch, and on average more than 75% do not have English as a primary heritage language. In 2010, of the 300 California schools that have more than 70% students receiving free or reduced-price lunch and 70% English Language Learners, the Rocketship network was the highest-performing group of schools that serve primarily low-income students. (ROCKETSHIP—Ch. 5, p. 76)

5. **Successful blended learning implementation requires collaboration at multiple levels.** Each of the programs highlighted in this book quickly recognized the old adage that it takes a village to raise a child. Blended programs provide opportunities for involvement from not only teachers and students, but also administrators, parents, community members, and businesses. Collaboration here might mean parent training, internships or content development/sharing with businesses, and sharing lessons learned with other similar program participants.

In 2010–2011, Thesys produced its online curriculum in a team process. Curriculum writers and instructional designers teamed together by content area to create courses, with a total of more than 30,000 man-hours spent in the first phase of development. Experts were sourced from around the country, based on experience in developing curriculum (classroom and online) and participation in graduate education programs. Subject Matter Experts (SMEs) with teaching experience in the classroom were sourced from graduate education programs in local universities (e.g., Claremont Colleges, UC Los Angeles, Pepperdine University, CSU Fullerton, and Chapman University). Instructional designers were sourced from around the country (Florida, Tennessee, California, San Francisco, Denver, Phoenix, etc.). (THESYS—Ch. 8, p. 152)

The collaborative relationship between RUSD and the city of Riverside is representative of a common belief that the quality of the city's workforce is directly tied to the educational programs of the schools. Together, we have identified and are leveraging multiple networks (wired and wireless) that are available to students, staff, and parents, including those maintained by the district and public utility companies. Increased infrastructure—including hardware and software that routes traffic to and away from sensitive resources—has supported the expansion of the district's open access policies. In 2012, the city of Riverside was identified as the top Smart Community by the Intelligent Community Forum (ICF), an international think-tank dedicated to studying global social and economic development. The award announcement touted the innovative practices of the school district, and Riverside Virtual School in particular, as one of the key factors for awarding the prize. (RIVERSIDE—Ch. 3, p. 42-43)

6. **Blended learning provides the opportunity and the need for a change in culture and pedagogy**. A strong implication that came directly from the programs was that technology exploration is important, but tools do not replace pedagogy. School administrations that are interested in blended instruction must understand that implementing such an approach often requires a change in pedagogical strategies, which in turn might require evolution of academic culture. For instance, the use of blended instruction *can* afford easier implementation of a personalized learning approach. However, program administrators that overvalue teaching toward the middle (or the mean) will not be successful in implementing a pedagogical approach that by definition contradicts their educational philosophy.

   The RUSD vision speaks to learning environments that promote active, independent learning, while mitigating the constraints of time and space, whether at the Riverside Virtual School or any of the district's comprehensive schools. By focusing on the learning—and therefore the learner—the plan redefines the role of the teacher as a facilitator of student-directed inquiry and learning. This represents a shift from teachers as solo practitioners to well-connected lead learners. While there is a need for certificated, professional teachers, learning is no longer bound to teacher certification or constricted within the walls of the classroom. The plan defines how virtual learning environments will engage professionals from the field and supports a means for expert voices to be delivered into the learning process. The same is true for engaging and incorporating voices of students and educators around the globe. The RUSD learning environments (both traditional and virtual) are moving from a transmission (passive) learning model to a transaction (active) model of learning—one that supports global awareness and connectedness, at both adult and student levels, throughout the organization. (RIVERSIDE—Ch. 3, p. 48)

The list of impediments to building an effective blended learning model is long. Many educators let these impediments keep disruptive innovation at bay—waiting for the "quick fix." Rocketship has shown that technology, or the lack thereof, does not need to stop designing more efficient instructional data-driven practices and innovations. They have also proven that innovation comes with trial and error—and with failures and triumphs. Flawed bell schedules, education codes, and facilities limitations are but a few of the hurdles Rocketship has had to overcome. Innovation is iterative and needs a strong data-driven cycle of continuous improvement. The innovators who take on blended learning also need to be prepared to roll up their sleeves and do work they may not have done in traditional settings. (ROCKETSHIP—Ch. 5, p. 102)

7. **Successful blended programs rely heavily on data-driven decision making**. We have made the argument that formative assessment needs to join summative evaluations, done both internally and with external research support, in order to promote positive growth and change. However, these assessments require data. Many schools get so caught up in standardized assessments that there is no room for the metrics that examine and explore the implementation of the blended program. This is not to open an argument of the value of standardized assessments, only to point to the success of blended programs that went beyond standardized measures. School administrators and teachers often feel overwhelmed by the sheer mass of data available through technology-enhanced instruction. As such, simply having access to data is not enough to promote success. There must be professional development, as well as tools, to support data exploration that will lead to timely and constant decision making.

   During the 2010–2011 school year, Thesys also ran a U.S. Government course with another school in Southern California. Measures of student activity on the LMS were provided every two weeks. The initial report saw low student use at the beginning of the class when compared to usage levels correlated to an "A" grade. When students saw the report, usage went up. At Thesys, further correlations by course have been developed based on summer 2011 results. Figure 8-5 clearly illustrates that LMS usage levels are correlated to the grades students received in Honors Biology. Therefore, student study behavior measures can be tracked to support achieving higher outcomes. More importantly, student behavior can be affected by the measurement and reporting. (THESYS—Ch. 8, p. 158)

   The most important aspect of Rocketship's Blended Learning Model is the use of data in assessing student and teacher performance and also in evaluating the effectiveness of the online curricula. Without data insights, teachers cannot fully understand or exploit the capabilities of the Learning Lab, or specify and monitor their students' Individualized Learning Plans. Students are assessed every eight weeks. Equally important, data enables Rocketship administrators to track and evaluate teacher effectiveness. Correlating student achievement with online curricula is an important measure of the online curricula's effectiveness. But the "data-driven" blended learning organization requires an investment in computer-based reporting, integration of data from key online learning programs, and a process for teacher assessment that incorporates fact-based findings and comparative information as part of ongoing professional development. (ROCKETSHIP—Ch. 5, p. 93)

8. **Blended programs can provide opportunities for both remedial and advanced instruction**. The key word in this implication is *can*. Simply building blended programs does not mean that students will automatically have access to assignments that match their learning styles or with content that meets their remedial or advanced needs. Program administrators must work hard to provide additional content or support that gives multiple opportunities to a wide range of audiences. This may not happen right away, but it often happens with time through iterative design.

   According to Emeott, "Geometry is applied Algebra. If a student fails to progress in Geometry, it's usually because he or she has not mastered the Algebra requisite to solving the problem." . . . "Once the students filled in the gaps in their Algebra knowledge and skills, Geometry became more understandable. The students made themselves more capable of success." (KENTWOOD—Ch. 10, p. 189)

   During Year 1, the partners noticed that many ACCESS students were struggling with math. A face-to-face math specialist was engaged to offer in-person math tutoring and intervention once a week at the learning lab. For Year 2, this face-to-face math tutoring opportunity was formalized and supplemented by the Connections online LiveTutor program, which provides "on-demand" access to content experts for students during and beyond the school day. (CONNECTIONS—Ch. 4, p. 69)

9. **Successful blended programs have direction.** A word that is repeated (in actual term or idea) throughout this book is the concept of flexibility. Programs evolve with changes in needs, technology, personnel, and funding. However, that does not mean that the programs are being developed haphazardly. Each of the programs discussed in this book began with—and consistently review—their mission and goals. These larger benchmarks help set the stage for the programs; they also help to ensure that the programs are consistently evaluated. The goals are also helpful in building support from parents and community members.

   The future goals of ATAMS, and Alliance charter schools at large, are focused on student achievement and fiscal balance. For ATAMS, the primary goal is to reach maximum enrollment so that the financial aspect of the BLAST model can invest in opening future blended learning schools. Alliance College-Ready Public Schools have invested in the model for continued student success and to support its overall mission to create high-performing schools in low-income communities that will annually demonstrate student academic achievement growth and graduate students ready for success in college. (ALLIANCE—Ch. 7, p. 145)

   The blended learning program, which began in early 2009, was created to develop digital curriculum for use at Fairmont Private School, and potentially other K-12 schools. Fairmont's executive management team had studied and discussed the role of digital curriculum in schools for about five years. A consultant was hired and a detailed research study was conducted. This study concluded that, while education technology had not yet been well developed in K-12 schools, students were nevertheless growing up with technology and wanted its use in their school experience. At the same time, universities were making significant use of technology for learning. Therefore, if students are to be prepared for college, then technology must be part of the K-12 education process. More importantly, Fairmont realized that education technology had the clear potential to further improve

academic outcomes of students. The vision of today's program is based on a simple belief that "today's learners are tech-savvy, knowledge hungry, and world aware . . . we can make education even more relevant for this new generation by appropriately applying technology to teaching and learning" (Rob Chandler, CEO Fairmont Education Group). Today, the program has evolved to serve 659 students during the academic year 2011–2012 and served 226 students during the past summer term (2011). (THESYS—Ch. 8, p. 150)

10. **Successful programs were created for a reason**. No program in this book was created because *everyone else was doing it*. The programs were successful because they began with a policy decision, a need, or an opportunity and then thoughtfully crafted a response that implemented a certain model of blended instruction that met those initial assumptions. This is not to suggest that research should be ignored. Said differently, if research (such as that presented here) provides evidence that blended and online instruction can be beneficial, administrators of non-blended programs should pay heed and examine their own practices. However, they should not blindly adopt a model just because that particular model worked somewhere else. Blended learning implementation, like all innovation use, should be thoughtful and purposeful.

    When the state first announced the new graduation requirements, KPS administrators moved up the district's own deadline for compliance, specifically to afford themselves time (and ironically, greater urgency) to address issues that were likely to arise from the new mandate. Those issues became clear in the first year: without alternative ways to learn Geometry, nearly one-third of the students would not meet graduation requirements; some might, if they continued to be unsuccessful in Geometry, give up altogether. . . . [T] he pilot offering arose from an administrative certainty that making the subject easier or altering the grading scale for required mathematics courses was not the way that Kentwood students would meet the new state graduation requirements. KPS offers its students new routes to their destination, not new destinations. (KENTWOOD—Ch. 10, p. 190, 192)

    The blended learning model is a response to a growing number of needs, both inside the classroom and in the education system as a whole. Online instructional content offers more options than a traditional textbook for diverse groups of learners, including the large percentage of English language learners in the Los Angeles area. Computer-based assessments free up instructor time, which can then be used to increase differentiation and rigor in lesson planning. Yet the human element in the classroom is essential; both students and teachers consistently request greater one-on-one time and attention. The BLAST model is a "marriage" between an ideal instructor-led classroom with a small student to teacher ratio and incorporation of the infinite Internet resources into the classrooms every day. Alliance strives to prepare students for college. The BLAST model does just that. (ALLIANCE—Ch. 7, p. 125)

Conclusion

The lessons learned in this book provide important next steps for existing programs or schools that are considering going online or blended. There are two final comments that need to be shared.

First, there needs to be more research done in this area. Policymakers need to find ways to fund research that improves practice. Schools need to work with researchers to examine existing data. Teacher educators need to better understand how to prepare in-service and pre-service teachers. It is easy to say we need more research, but we understand the depth of that request. There are as many models of blended instruction as there are big research questions about their use and impact. However daunting, we need to better understand how to best serve our students.

Second, there are various definitions of blended learning that often get tied to the models of blended instruction. For some, blended might mean that a school offers some of its content online and some face-to-face. For others, blended might mean that individual courses offer both web-based and face-to-face content. Still others, like Education Elements, approach blended learning as:

> *"leverag[ing] technology to create a learning environment where students have daily opportunities for individualized learning and teachers have the opportunities, resources, and time to differentiate small group instruction in a classroom. Blended learning environments are based on individualized learning opportunities for every student, differentiated instruction supported by data-rich feedback loops, and sustainable school models." (Education Elements—Ch. 2, p. 10)*

Further research and case studies like these will help us to better define our terms. More importantly, at its core, much of the work in blended instruction could also be labeled Internet-based instruction. Arguably, research on Internet-based instruction has been occurring for 20+ years. Perhaps the technology has changed, but many of the pedagogical concepts have not. The point is that we should not ignore past research on technology-based instruction simply because people have suggested this is *brand new*. One of the ways to strengthen our practice is to examine the pedagogical practice behind the tool and then to explore the research, from the multiple fields, that has empirically tested those concepts.

APPENDIX

A References by Chapter

Chapter 1

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Other Resources:

- Follow me on Twitter @HagdogUSC
- RVS website (*www.rvslink.net*)
- RUSD website (*www.rusdlink.net*) and *http://rusdtech.net/*
- RUSD 2011–2016 Technology Use Plan (*http://bit.ly/oFPGbU*)
- CK12 Foundation (*www.ck12.org*)
- University of California College Prep (UCCP) (*www.uccp.org*)
- Education Forward (*www.educationforward.org*)
- California Digital Textbook Initiative (*http://www.clrn.org/fdti/*)
- California Open Campus Initiative (*www.caoclink.org*)
- USDOE Study (*http://1.usa.gov/cmNrwd*)
- USDOE Blueprint for Reform (*http://1.usa.gov/90M1lS*)

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APPENDIX

B

Appendices by Chapter

Chapter 5

The Rocketship Public School Model Online Curriculum Selection Rubric

Rocketship Curriculum Evaluation Rubric						
Deal Breakers	**Meets this criteria**	**Notes**				
*Must be either adaptive/assignable content (ideally both; see rubric below)						
Browser-based and no local server						
Able to serve 120 simultaneous users over standard 1Mbps connection						
Students can work independently without the oversight of a credentialed teacher						
No additional materials/ manipulatives required						
System tracks individual student progress by:						
• Lessons complete						
• % mastery of individual micro-standards						
• Accuracy						
• Time on task						
• System continues to provide other lessons once student has completed an assigned lesson/ standard						

Rocketship Curriculum Evaluation Rubric, cont.

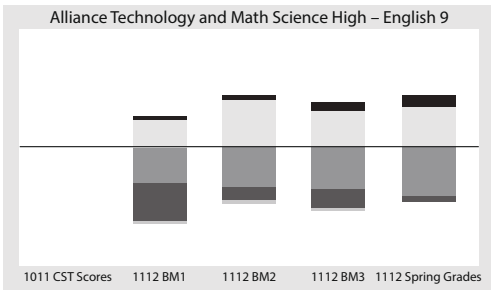
Necessary Future Enhancements	Will Meet this Criteria	Notes				
*Alignment: Reporting by Common Core Standards at the micro-standard level						
*API: Ability to fully adopt Rocketship Teacher Dashboard APIs :						
• Single user sign-on						
• Automated account provisioning						
• Data integration with Teacher Dashboard						
*Assignability of content via Teacher Dashboard through web services API (requires ability for admin to target Common Core Standards at the micro-objective level)						
Weighted Decision Criteria Items	**Weighting**	**Does not Meet**	**Partially Meets**	**Meets/ Exceeds**	**Weighted Score**	**Notes**
		0	(1–2)	(3–4)		
*Alignment and Content Coverage: at least 100 hours of content/subject/grade (exceptions for fact fluency/other targeted skill programs); content aligned to Common Core grade-level standards at the micro-standard level	3				0	
*Assessments: program assigns leveled pre/post assessments to measure student growth and readiness for next units. Independent assessments verify content mastery	3				0	
*Adaptivity: system determines student's current instructional level within addressed content micro-standard and adapts instruction to current level	4				0	
*Assignability: ability for admin to influence/control content assignment in an automated, efficient way	5				0	
*API and Data Integration: full adoption of Rocketship Teacher Dashboard APIs for account management and academic data	4				0	
Curriculum: research-based instructional design and demonstrable student outcomes in field-testing	3				0	
Curriculum: system teaches and reteaches concepts through multiple pedagogical approaches	2				0	

Rocketship Curriculum Evaluation Rubric, cont.						
Engagement: built-in incentive system (game, rewards) for students as they demonstrate their learning	3				0	
Cost: all-in cost proportional to $100/student total online curricula budget (roughly $15–$30 for core program, $10–$15 for addressable practice, $5–$10 for fluency individual skill, i.e., typing)	5				0	
Train-the-trainers model: one-time training that we can deliver to ILS personnel	3				0	
Total Pre-Screen Score (Max 140)					0	
Verify During Trial	**Weighting**	**Does not Meet**	**Partially Meets**	**Meets/ Exceeds**	**Weighted Score**	**Notes**
		0	(1–2)	(3–4)		
*Assessment and Results: students make significant gains that can be measured by Rocketship's micro-objective assessments	5				0	
*Confirmation of Adaptivity: system modifies lessons in real time based on student error and alters content to adapt to student's individual level	4				0	
*Confirmation of Assignability: system allows user to assign content and alter scope and sequence at micro-standard level	5				0	
Student Usability: ease of student navigation and comprehension of instructions	4				0	
Admin Oversight: simplicity for coordinators to administer program and assist students	3				0	
Engagement/Breadth: curriculum could be used continuously without burn-out or disengagement	4				0	
Support: phone/email access to responsive, respectful, effective support team	3				0	
Total Trial Verification Score (Max 112)					0	

2011 – 2012 Benchmark, CST, Final Grade Comparison
Alliance Technology and Math Science High

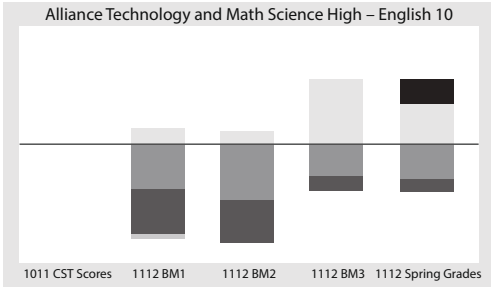
English 9

	CST	2011 -12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		68	75	78	91	
Advanced/A	%	1%	5%	8%	10%	TBD
Proficient/B	%	26%	43%	33%	38%	TBD
Basic/C	%	34%	39%	40%	46%	TBD
Below Basic/NP	%	34%	11%	17%	5%	TBD
Far Below Basic	%	4%	3%	3%		TBD



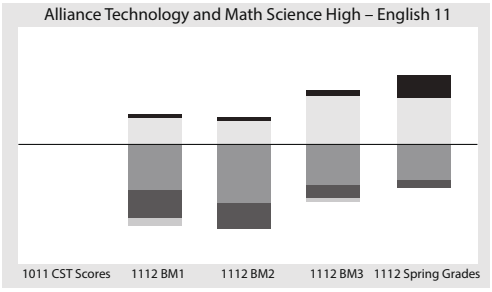
English 10

	CST	2011 -12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		62	84	67	80	
Advanced/A	%	0%	0%	0%	21%	TBD
Proficient/B	%	15%	12%	60%	38%	TBD
Basic/C	%	40%	49%	28%	31%	TBD
Below Basic/NP	%	39%	38%	12%	10%	TBD
Far Below Basic	%	6%	1%	0%		TBD



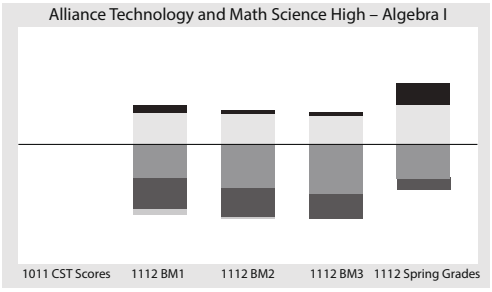
English 11

	CST	2011 -12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		61	73	66	75	
Advanced/A	%	2%	3%	5%	20%	TBD
Proficient/B	%	25%	22%	45%	43%	TBD
Basic/C	%	41%	52%	36%	31%	TBD
Below Basic/NP	%	26%	23%	12%	7%	TBD
Far Below Basic	%	7%	0%	2%		TBD



Algebra I

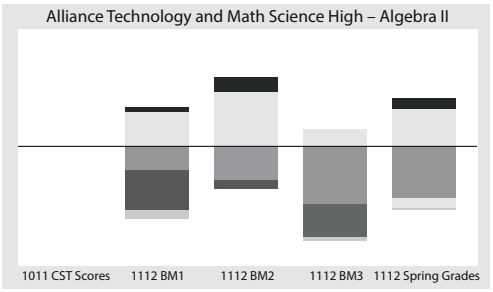
	CST	2011 -12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		80	101	97	139	
Advanced/A	%	8%	4%	5%	22%	TBD
Proficient/B	%	28%	27%	25%	34%	TBD
Basic/C	%	33%	41%	46%	32%	TBD
Below Basic/NP	%	28%	28%	24%	12%	TBD
Far Below Basic	%	5%	1%	0%		TBD



■ Advanced/A ■ Proficient/B ■ Basic/C ■ Below Basic/NP ■ Far Below Basic

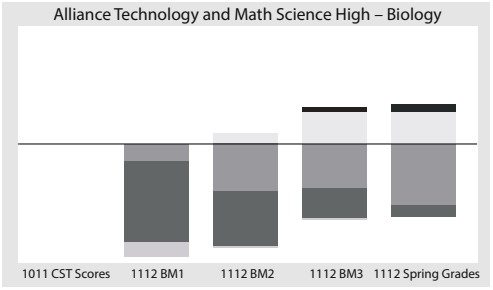
Algebra II

	CST	2011-12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		102	107	103	116	
Advanced/A	%	5%	14%	0%	10%	TBD
Proficient/B	48%	30%	48%	15%	33%	TBD
Basic/C	%	22%	30%	52%	47%	TBD
Below Basic/NP	%	35%	8%	30%	9%	TBD
Far Below Basic	%	8%	0%	3%		TBD



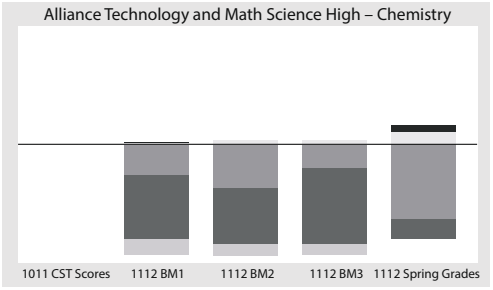
Biology

	CST	2011-12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		78	101	97	108	
Advanced/A	%	0%	0%	4%	7%	TBD
Proficient/B	%	0%	9%	29%	29%	TBD
Basic/C	%	15%	42%	39%	54%	TBD
Below Basic/NP	%	72%	49%	27%	10%	TBD
Far Below Basic	%	13%	1%	1%	0%	TBD



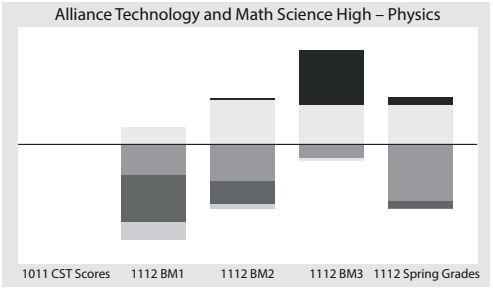
Chemistry

	CST	2011-12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		71	82	77	82	
Advanced/A	%	1%	0%	0%	6%	TBD
Proficient/B	%	1%	4%	4%	11%	TBD
Basic/C	%	27%	38%	21%	66%	TBD
Below Basic/NP	%	56%	49%	66%	17%	TBD
Far Below Basic	%	14%	10%	9%	0%	TBD



Physics

	CST	2011-12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		45	47	42	42	
Advanced/A	%	0%	2%	50%	7%	TBD
Proficient/B	%	16%	40%	36%	36%	TBD
Basic/C	%	27%	32%	12%	50%	TBD
Below Basic/NP	%	42%	21%	2%	7%	TBD
Far Below Basic	%	16%	4%	0%	0%	TBD



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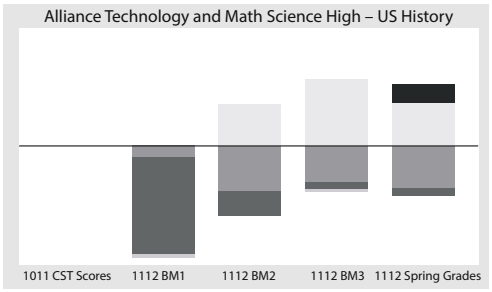
2011 – 2012 Benchmark, CST, Final Grade Comparison
Alliance Technology and Math Science High, cont.

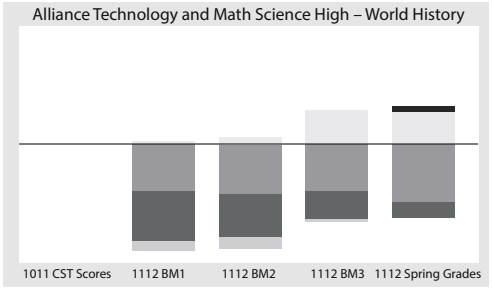
US History

	CST	2011-12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		30	41	41	76	
Advanced/A	%	0%	0%	0%	17%	TBD
Proficient/B	%	0%	37%	59%	38%	TBD
Basic/C	%	10%	41%	32%	38%	TBD
Below Basic/NP	%	87%	22%	7%	7%	TBD
Far Below Basic	%	3%	0%	2%		TBD



World History

	CST	2011-12 Benchmarks			Grades	CST
	2011	BM1	BM2	BM3	Spring 2012	2012
Students Tested		64	71	66	84	
Advanced/A	%	0%	0%	0%	5%	TBD
Proficient/B	%	3%	6%	30%	29%	TBD
Basic/C	%	42%	45%	42%	52%	TBD
Below Basic/NP	%	45%	39%	26%	14%	TBD
Far Below Basic	%	9%	10%	2%		TBD



■ Advanced/A ■ Proficient/B ■ Basic/C ■ Below Basic/NP ■ Far Below Basic

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