School District Partnerships Help Colorado K-12 Blended Learning Take Flight

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EXECUTIVE SUMMARY

Blended learning is a versatile teaching method that combines in-person instruction with online learning in the classroom, lab, or other work space including home. When done effectively, blended learning enables teachers to automate activities such as testing, data analysis, and skills practice, thereby allowing them to focus on high-impact instructional strategies. Blended learning also allows teachers to differentiate instruction and increase student interaction with academic content. Although few studies have been conducted on the efficacy of blended learning, the research, including a 2013 RAND Corporation study, has found positive impacts.

This paper focuses on system-wide efforts in three Front Range school districts and a group of rural districts in the San Luis Valley. The report also provides a list of state and national resources for schools and districts looking to implement blended learning techniques on a limited or system-wide basis and questions to consider prior to starting. Blended learning implementation in Falcon School District 49, Greeley-Evans School District 6, St. Vrain Valley School District, and in the San Luis Valley varies from the degree of centralization to the use of partner organizations to how districts are building on existing resources:

- **Greeley-Evans 6** had enjoyed success with its initial blended learning experience at its virtual school. With the support of The Learning Accelerator and the Colorado eLearning Collaborative, the district is beginning a multi-year, district-wide blended learning transformation.

- **Falcon 49** began by introducing blended learning at its state-of-the-art Falcon Virtual Academy. Along with Yuma School District 1 and Pikes Peak Community College, the district also launched the first-of-its-kind Colorado Digital Board of Cooperative Educational Services (BOCES) to serve blended learning and online schools. Next year, Falcon 49 will introduce blended learning into brick-and-mortar classrooms.

- **St. Vrain** has implemented blended learning in its online school and credit recovery program. The district will launch several pilot Flipped Classrooms next year.

- In rural southern Colorado, 14 **San Luis Valley** school districts, the San Luis Valley BOCES, and the Colorado Education Initiative partnered to bring technology to the classroom as part of a broader inter-district collaboration to improve education throughout the valley.

The scope of implementation and district strategies for covering costs, developing buy-in, using existing resources, collaborating, and handling other challenges vary considerably. Still, the decisions to embark on blended learning all were motivated by a desire to improve student achievement, to give teachers additional instructional tools, and to take advantage of emerging instructional technology that can bring efficiency and potential cost savings. Although still works-in-progress, the experiences of these early adopters offer a roadmap for other Colorado districts.

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INTRODUCTION

Last year, the Independence Institute published *The Rise of K-12 Blended Learning in Colorado*[1], which offered an overview of blended learning models and descriptions of district and school initiatives in Boulder, Brighton, Buena Vista, Denver, Falcon, Jefferson County, and Woodland Park, as well as blended learning schools around the country. This paper, the second in the two-part series, focuses on system-wide efforts in three Front Range school districts and a cluster of rural districts in the San Luis Valley.

As the first paper noted, blended learning is not a curriculum but rather a versatile teaching method that combines in-person instruction with online learning in the classroom, lab, or other work space including home. When done well, blended learning enables teachers to automate activities such as testing, data analysis, and skills practice, thereby allowing teachers to focus on high-impact instructional strategies. Blended learning also allows teachers to differentiate instruction and increase student interaction with academic content. The balance of in-person instruction and online education depends on the model.

There are four primary blended learning models, according to the Clayton Christensen Institute for Disruptive Innovation. In the **Rotation Model**, students rotate between online lesson delivery and face-to-face instruction at various stations throughout the classroom, between a classroom and a learning lab, or between a classroom and home computer. A popular application of this model is the "Flipped Classroom," wherein students receive direct instruction through an online program after school at home, often a recorded lecture, and then apply concepts in class under the teacher's guidance. In the **Flex Model**, the curriculum is delivered online, usually in a learning lab, while teachers provide on-site support in the form of tutoring or small group instruction. The **Self-blend Model** enables students to take traditional courses at school and self-selected online courses at home or another location. In the **Enriched Virtual Model**, students take classes online at home and check in with teachers for face-to-face learning as needed.[2] These blended learning models are often facilitated by a Learning Management System (LMS)—a software application through which students can engage with the online curriculum, submit assignments, participate in discussions, take tests, receive grades, and record attendance.

NEW RESEARCH SHOWS POSITIVE IMPACTS

Research on the efficacy of blended learning has been limited but encouraging. Prior to 2013, five studies on blended learning at the K-12 level showed positive results; students learned more in blended learning environments than in strictly face-to-face or online classes.[3] In 2013, RAND Corporation published new research on the effectiveness of blended learning.[4] Researchers examined the effectiveness of Cognitive Tutor Algebra I (CTAI), a first-year algebra course developed by Carnegie Learning, where students spend 60 percent of the time in the classroom working with a teacher and textbook and 40 percent of the time working on Cognitive Tutor software.[5] The adaptive software identifies student deficiencies and helps students work toward mastery in those areas.

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mance of nearly 18,700 students at 147 middle and high school sites in seven states. The experiment involved a control group that received traditional instruction and an intervention group that experienced blended learning. Each school had two cohorts of student participants, students who took the class in year one and students who took the class in year two. Researchers found that math scores for high school students taking the CTAI class in the first year of implementation were not different than their peers in traditional math classes. However, high school students who took the CTAI math class in the second year experienced significant improvement in their algebra scores over students in traditional classes. Middle school students in CTAI classes also experienced greater improvement; however, the impact was not statistically significant.

District-wide Implementation

While an increasing number of blended learning classrooms, schools, and even charter school networks serve as examples, there are far fewer exemplars of district-wide blended learning efforts. Most of the districts profiled in *The Rise of K-12 Blended Learning in Colorado* introduced blended learning to their district online schools or alternative/credit recovery programs. Many of their students were struggling with persistence and self-discipline in a purely online environment. By requiring face-to-face time with teachers, districts discovered that students felt more connected to school, demonstrated better persistence, and were more likely to complete classes. Having invested in the development of online courses, online teachers, and infrastructure such as Learning Management Systems, districts saw the potential of online and blended learning

for traditional brick-and-mortar students.

The evolution of blended learning differed slightly in Brighton School District 27J, which had not opened a virtual school but opened a blended learning school instead. Denver Public Schools (DPS) took a different path to introducing blended learning. With the support of a three-year, $2.1 million grant from the Janus Foundation, DPS initiated blended learning in six pilot schools. In the 2012-13 school year, West Generation Academy and Grant Beacon Middle School were designated Janus Blended Learning Lab Sites. The following year, High Tech Early College, Kunsmiller Creative Arts Academy, Sabin World School, and University Park were awarded funds. Lab Sites receive professional development, hardware, software, data systems, and technical support.

Like most of the districts described in the first paper, Falcon School District 49, Greeley-Evans School District 6, and the St. Vrain Valley School District implemented blended learning in their district online schools before introducing it into brick-and-mortar classrooms. As DPS has done, school districts in the San Luis Valley have begun piloting blended learning in traditional classrooms with the support of a grant. Blended learning implementation in these districts varies in other significant ways from the degree of centralization to the use of partner organizations to how districts are building on existing resources. In each case, the decision to embark on blended learning was motivated by a desire to improve student achievement, to give teachers additional instructional tools, and to take advantage of emerging instructional technology that can bring efficiency and potential cost savings.

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GREELEY-EVANS SCHOOL DISTRICT 6

PARTNERSHIP ORGANIZATIONS

Northern Colorado's Greeley-Evans School District 6 has a diverse student body of 20,000 and a per-pupil funding level below the state average. These challenges broadened its appeal as a district partner to The Learning Accelerator (TLA), an organization founded to bring blended learning to scale. If Greeley-Evans 6 can demonstrate that blended learning implemented on a system-wide basis makes a difference, it will set an example for other middle-sized districts. Program fidelity and hard work will be the determining factor in success rather than district advantages in school finance or student demographics.

Besides Greeley-Evans 6, TLA also has partnered with Reynoldsburg City Schools (RCS) in Ohio, and 17 campuses in the Los Angeles Unified School District in California (Partnership for LA Schools), to engage in blended learning implementation. TLA's focus is system-wide reform. "Individual school proof points are valuable," notes John Branam of TLA. "But transformation happens at the system level. We believe blended learning has the power to accelerate and deepen learning for public school students in ways that other reforms have not."[6]

"The Greeley-Evans School District 6 has demonstrated its commitment to improving student learning, and its willingness to embark on this important journey of innovation," says Branam.[7] The Colorado eLearning Collaborative (CeC), an organization that works with districts and charter schools to expand high-quality blended and online learning opportunities in Colorado, also recommended Greeley-Evans 6 based on the district's leadership and read-iness to move forward with blended learning. For several years, the district has been purchasing classroom technology with the support of local donors, including the Success Foundation. Many teachers use clicker technology (Active Expressions) and computer-enhanced white boards (Promethean Boards), and are enthusiastic about using technology to a greater degree to enhance teaching and learning. The district's online school, ENGAGE Online Academy, has been offering blended learning opportunities since Principal Deagan Andrews took the helm two years ago.

Andrews, now the district's Director of eLearning Services, is leading the blending learning implementation. He became interested in blended learning while serving as a teacher and later as the district's math and science coordinator. Andrews recognizes that "just putting devices in classrooms has been tried, but it hasn't made a dramatic difference for teachers and students."[8] Typically, students use computers for reading, writing, computing, and online research. In this role, the computer is a more efficient typewriter, library catalogue, or slide rule, but not a teaching agent. Blended Learning offers a more dynamic application of computer technology. When students learn through an online Khan Academy[9] session, a teacher's uploaded lecture, or an adaptive computer math program, it is like adding another teacher to the classroom.

In December 2013, TLA, Greeley-Evans 6, and CeC began to work together to systematically implement blended learning over a five-year period. CeC is providing consulting and guidance in the overall planning and implementation at the practitioner level.

As a member of the CeC, Greeley-Evans 6 participates in an online professional networking platform and was able to take advantage of consortium pricing when choosing Schoology for the district's LMS. CeC has provided training for all of the instructional coaches in the district and will be offering professional development in the basics of blended learning, instructional best practice, and creating quality online courses this summer and over the next few years. Additionally, CeC is working with the principals of the two pilot schools to prepare for the 2014-15 school year.

Communication has been vital to creating enthusiasm for blended learning. During the 2014 winter-spring semester, the district introduced the concept to teachers, created objectives, expectations and timelines, and examined infrastructure and human capital needs. The district selected a district-coordinated approach as opposed to a more decentralized portfolio approach for its implementation design.[10] In the spring, the district established a blended learning vision, implementation timeline, and basic criteria to guide administrators and teachers in their selection of blended learning models. In summer 2014 and thereafter, the district will fund professional development through CeC, and will develop the following key elements:

- Rubrics to guide practice, pre- and post-tests

- A list of approved content providers

- High-speed Internet access

- A data dashboard

- Guidance for purchasing devices

The district completed a site readiness assessment and created a prioritized list of schools to implement blended learning. Schools are responsible for determining which classrooms will adopt station rotation, lab rotation, or flipped classrooms, and will monitor implementation. Schools will purchase devices with support from the Success Foundation. Schools can apply to the district for small grants for early adopters.

The district has been methodical in communicating with teachers, principals, and the school board. In January, the district Office of eLearning presented to the board. The district conducted a district readiness assessment[11] designed by TLA to assess teachers' and principals' knowledge of and attitudes toward blended learning, using data, professional development, and technology. On April 25, 2014, the district hosted Colorado's Fourth Annual Online and Blended Learning Symposium at ENGAGE Online Academy Learning Center. More than 200 educators from the district and other Colorado districts attended. In April and May, the district conducted 10 listening sessions for teachers and principals to discuss blended learning implementation and answer questions.[12]

Andrews found the listening tour to be valuable not just for sharing information but also for gauging teacher's excitement and concerns about blended learning. Many of the sessions were standing room only. "Teachers have a sense that this is what they need to do to differentiate for students and add additional instructional hands," says Andrews. "Teachers want more time to work with individual students and small groups. They find the idea of blended learning empowering."[13] The

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> **— John Branam, The Learning Accelerator**

main concerns about blended learning were regarding technology. Teachers feared that it may not be reliable. There may not be enough devices and they may break. Internet service could be too slow. Teachers also want professional development so that they will know how to implement blended learning successfully.

The district has been intentional in informing teachers, providing professional development options, and asking them to commit to blended learning. Teachers can opt in but are not required to add blended learning to their classroom. The district believes more and more teachers will commit when they see the utility and potential of blended learning. There is always a danger, says Branam, of pushing too much too fast. "We don't want this to be the straw that breaks the camel's back. Rather, blended learning can be the focus that pulls together multiple promising education practices such as differentiation, interventions, and data-driven instruction, in a way that makes it easier for teachers to do their jobs and get back to what they love doing: teaching."[14]

On June 9, 2014, the Greeley-Evans 6 Board of Education selected Schoology to be the district's LMS. An LMS is a complex software platform through which students can engage with the online curriculum, submit assignments, and take tests. The LMS provides teachers with data analysis, communication tools, and record keeping options. The district's technology committee, composed of leaders, teachers, and staff, researched LMS companies and made the recommendation. Teachers will receive professional development over the summer through CeC on how to use the platform. Meanwhile, TLA helped the

district assess its broadband needs which the district will begin upgrading in summer 2014.

CLASSROOM INNOVATION AT JACKSON ELEMENTARY

Although some of the building blocks are not yet in place, several teachers began to implement blended learning during the last quarter of the 2013-14 school year. Apricot Truitt, a third grade teacher at Greeley's Jackson Elementary School who is currently finishing her Ph.D. in Education Technology, was excited about blended learning's potential to increase achievement in math. She introduced both the Station Rotation model and the Flipped Classroom, with the objective of increasing students' exposure to math concepts and moving all of them toward mastery.

Truitt informed parents one-on-one about classroom changes and expectations at parent-teacher conferences. Three to four evenings a week, students are expected to watch an 8-10 minute video recorded by Truitt, which introduces the math concepts students will practice in class the following day. Students fill out a note-taking sheet that is modeled after Cornell Notes, a system frequently used in middle and high schools. This sheet allows students to take notes, to explain what they have learned, and to write questions they still have about the concept.

Truitt discovered that approximately 90 percent of students had access to technological devices at home while the remainder could use computers at the public library or borrow from a friend or family member. Families also were given the opportunity to take advantage of Comcast's Internet Essentials, which enables low-income families to purchase a low-cost

computer along with a $9.95 monthly Internet plan. Students who did not watch the video were required to watch it during the Khan Academy segment of the Station Rotation model within the classroom math rotation. Affinity for Khan Academy was a strong motivator; for the most part, students were faithful in doing their homework. Parents liked that they could view the video with their students and follow their math work, thus alleviating the frustration often felt about not being able to support their children with math homework.

During class time, the 27 students in Truitt's class worked in three groups of nine. Groups rotated from learning skills on the computer, to working directly with the teacher, to engaging in independent or group work. By the end of the math period, all students had experienced the three learning environments:

- During the computer segment, students learned foundational math skills on Khan Academy, an adaptive program that enables students to master skills at their own pace. A data dashboard showed Truitt how students were advancing and if any student was stuck and needed additional teacher-led instruction. Khan Academy is currently aligning its lessons with the Common Core.

- During the teacher-led segment, students practiced the skill they learned the night before, had their questions answered, and had their learning challenged as they were ready. Because there were nine students in a group, each student could get needed individual attention.

- During the independent work segment, students worked together or by themselves to practice the concept or to apply it through a hands-on application or multi-step story problem. Truitt also conducted whole group instruction and guided in-depth investigations when appropriate to further the students' learning.

When Truitt first initiated blended learning, she found that keeping students on track, particularly during the independent work segment, was challenging if the station was not clearly structured. She developed checklists for each class period to ensure that students stayed on task. Truitt found that, "When there are clear expectations, students take ownership of their learning. It's a highly successful model but you need to make sure that you are organized and prepared each day."[15] Truitt is also looking for additional curriculum-aligned computer programs because she has found that Khan Academy can be a little too advanced for her low readers.

After just a few months of implementation, Truitt was pleased with the results: students posted a 21 percent improvement in math scores on curriculum assessments over previous tests. Given the short timeframe of the implementation, scores are not ironclad proof of success, but they do give reason for optimism. She looks forward to a full year of implementation in 2014-15.

DIFFERENTIATING INSTRUCTION IN EVANS
Likewise, Tammy Hermance, a teacher at Ann K. Heiman Elementary School in Evans, is enthusiastic about her experience with blended learning during the last quarter of the 2013-14 school year. Hermance decided to implement Station Rotation

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after hearing Andrews give a presentation about blended learning to the District Curriculum Council where she serves. Hermance was drawn to the idea because of its potential to differentiate instruction for students in her class of 29 fourth graders.

Hermance divided her class into four groups of seven to eight students. One group worked on Khan Academy, one received instruction from the teacher, and the other two groups worked collaboratively on assignments or projects designed for that group. Students worked on their own or with each other, and had to check their answers with a partner and justify their responses.

Group membership changed daily. Hermance used student answers to unit pretests or various checks for understanding to determine group membership. A preparation for a typical Tuesday looked a bit like this: Hermance selected a focus skill related to fractions. She noted that the pretest shows some students fully understood the concept and were ready to move on, others needed a little practice, others needed a lot more practice, and some did not understand the concept at all. Hermance formed groups based on their understanding and then designed the independent work and the teacher-guided work according to each group's needs. She also programmed each student's Khan Academy account to recommend specific lessons as needed. Khan Academy's sequence enables students to move along at their own pace and generates recommendations for each learner. Teachers can override these recommendations if they feel students need more time to master the skill.

To help students learn the new routine, Hermance only ran three rotations for

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the first week and did not conduct a teacher-led station. Instead, she circulated through classroom to help students understand expectations. Afterward she found that students stayed on task with little prompting. Through the remainder of the semester, Hermance conducted periodic short walks through the classroom while students in her group were focused on solving a math problem. Hermance noticed that "students are excited about taking more control over their own learning."[16] She saw a significant increase in test scores on curriculum assessments for students of all abilities in math.

Hermance liked the differentiated instruction and that students were exposed to concepts multiple times allowing them to master skills. Struggling students received a lot more one-on-one help, and advanced students were able to move forward. As for challenges, she found that keeping track of the data was the most difficult part of implementation. Hermance is looking forward to working with an LMS that will support her in this area.

Hermance, Truitt and other teachers, on an opt-in basis, will start implementing blended learning from day one in fall 2014. Some schools have decided to implement blended learning on a school-wide basis. Bella Romero K-8 Academy of Applied Technology will start with grades six through eight as they work with Education Elements to build out a school-wide blended learning program. Under the leadership of Jon Cooney and in partnership with Ed Elements, the Bella Romero team is working through a design-thinking process to get the right instructional model for their students and teachers, selecting digital content to meet their needs and planning

out their professional development for the year. The school hopes to be a model for whole school transformation and significant cultural change for the rest of the district. Education Elements is a national company that provides a personalized learning platform, professional development and technical assistance to schools looking to seamlessly embed technology in classroom learning.

By the 2018-19 school year, students across the district will have opportunities to engage in blended learning. If well implemented, blended learning could increase student achievement, student engagement, and teacher satisfaction in Greeley-Evans 6, says Branam. It also would make Greeley-Evans 6 a national model. Fidelity to best practices is essential. Implementing blended learning requires a commitment of time, money, and political capital. If done well, all students will benefit. If done inconsistently, schools risk exacerbating the achievement gap. Self-motivated high achievers could take advantage of the learning opportunities even in a chaotic classroom, while struggling students may fall further behind. At that point, says Branam, "The system burns the bridge of public trust."[17] For this reason, Greeley-Evans 6 and its partners will constantly assess the implementation and its impact on student achievement.

FALCON SCHOOL DISTRICT 49

Falcon School District 49, located east of Colorado Springs, has taken a different district-wide approach. In its strategic plan, Falcon 49 resolved to "create a robust portfolio of distinct and exceptional schools" and to "ensure educational experiences are individualized, capable of launching every student toward success."[18] Increas-

ing access to blended and online learning has been one district strategy for meeting these goals. The district has incorporated blended learning into its virtual school, helped to create a Board of Cooperative Educational Services (BOCES) focused on blended and online learning, is expanding blended learning opportunities at its Patriot Learning Center, and has developed infrastructure that is available to serve all students in the district.

COLORADO DIGITAL BOCES

In 2013, the Boards of Education for Falcon School District 49 and Yuma School District 1 and the Pikes Peak Community College Board of Regents formed a new type of entity in the state, the Colorado Digital BOCES (CD BOCES) to serve blended learning and online schools. The BOCES contracted with its first school, the Colorado Preparatory Academy (CPA), in fall 2013. The school serves approximately 300 students. Students progress through the self-paced, online K12 Inc. curriculum and meet regularly with teachers through live web conferencing using Blackboard Collaborate.

In fall 2014, CD BOCES will contract with a second school, the Rocky Mountain Digital Academy (RMDA), managed by Summit Education. Summit Education operates GOAL Academy, a statewide charter school authorized by Falcon 49. As an Alternative Education Campus (AEC)[19], GOAL Academy serves mainly at-risk students. Students attend classes primarily online at home and visit any of the 17 drop-in centers for one-on-one tutoring and testing. Like GOAL Academy, the RMDA will offer an online curriculum and access to drop-in centers. Unlike its sister school, RMDA will not be an AEC or a

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charter school. Students will have access to concurrent college course enrollment and will be able to access content specialists and advisors throughout the school day by phone, web conferencing, or at a drop-in center.

RMDA and CPA are contract schools rather than charter schools, and cannot waive BOCES or state education requirements. According to Kim McClelland, CD BOCES Executive Director and the iConnect Zone Leader/Zone Superintendent at Falcon 49, CD BOCES has been approached by other education leaders looking to open online and blended learning schools.[20] The appeal of the CD BOCES is that its expertise focuses solely on contracting with online and blended learning schools. The CD BOCES has begun to offer professional development in blended and online best practices. "At CD BOCES we understand virtual and blended education, because that's all we do," says Kindra Whitmyre, CD BOCES Director of Operations and Special Education.[21]

Falcon Virtual Academy

Falcon Virtual Academy (FVA) experienced its first full school year at its new location, a 21,000 square foot, state-of-the-art learning center, during 2013-14. During the year, approximately 200 of 500 students were new to FVA. By and large, both new and returning students embraced the blended learning opportunities and found value in being on campus for tutoring and classes. Ninety-seven percent of seventh and eighth grade students and 85 percent of high schoolers came in to meet with teachers or to attend on-site enrichment courses.

At Falcon Virtual Academy, students in grades 7-12 can meet with teachers on

Mondays and Tuesdays, and earlier grades on Wednesdays and Thursdays. Fridays are reserved for elective courses such as the 12-week "Myth Busters" hands-on science lab course. Coming into the building is voluntary so "electives must be engaging in order to draw students," says FVA Principal Dave Knoche.[22] Like traditional brick-and-mortar schools, FVA also has clubs and holds events like prom. Elective courses, one-on-one tutoring, and events help students develop a connection to the school even though they work from home much of the time. It has made a difference; FVA's School Performance Framework (SPF) status has moved from Priority Improvement to Improvement during the past four years of its existence. Today, it has the highest SPF ranking of any online school in the state.

Patriot Learning Center

The district also is introducing blended learning at its Patriot Learning Center, a small AEC that offers middle and high school programs, afternoon/evening courses for high schoolers, and GED preparation. The school will operate a Flex Model with students working on online courses through Fueled Education (formerly Aventa) while receiving academic help and social-emotional support through interactions with teachers and staff. Falcon 49 will augment the Patriot Learning Center's high school offerings to include site-based classes, online courses, internships, and concurrent enrollment.

Additionally, the district is hiring adjunct teacher specialists who can work with students in district schools, online, or over the phone at a moment's notice when students have questions or need help. A student's test data and Individual Career

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and Academic Plan (ICAP) goals will determine his or her unique pathway to graduation that can include online and blended learning options throughout the district. "We are building a model around student needs," says McClelland.[23] Multiple pathways eventually will be available to students in other schools.

The district has purchased the LMS Schoology to facilitate the portfolio of options offered to students. CD BOCES will use Schoology as well, and over the summer will develop upper level online courses for students in the Yuma and Falcon districts. Falcon also has begun to offer online and blended professional learning opportunities taught by Learning Services Executive Director Amber Whetstine through the Aha! Network Academy.

St. Vrain Valley School District

Located north of the Denver metro area, St. Vrain Valley School District is the eighth largest in the state. Encompassing 411 square miles, the district serves Front Range communities and small historic towns. As with Falcon 49 and Greeley-Evans 6, St. Vrain's first experience with blended learning was at its online school, St. Vrain Online Global Academy, which opened in 2011. Students attend school online at home and at a school facility in Longmont. Students are required to be onsite 4.5 hours a day until they have completed their first class, and thereafter a minimum of 2.5 hours per week per enrolled class. Students also must meet twice weekly (1.25 hours/class) for a structured math class if they are taking Algebra I or Geometry. At any point, if a student is not maintaining adequate pace, they are required to be onsite daily until they are back on track.

In the 2012-13 school year, St. Vrain decided to launch an eCredit Recovery Program for students in their brick-and-mortar schools. Initially, students recovered credits through an online program at home or in the school's computer lab on their own. The program's first year of operation did not go well. Students struggled with self-discipline, time management, perseverance and motivation, the very skills needed to succeed in online education.

In the second year of operation, the district decided to require students go to a physical location after school two times a week over a 12-week period. During this time, teachers work with students to acquire autonomous learner skills such as goal setting, note taking, monitoring progress, and perseverance. "The biggest aha moment for us was realizing that teachers are not there to impart information; that is the online curriculum's job," says Nawal Nader-French, the district's eLearning coordinator. "Teachers are there to help students overcome difficulties by using data to identify and reteach concepts with which they continue to struggle while guiding them towards becoming autonomous learners."[24]

At the beginning of the eCredit class, students take a diagnostic test which allows them to pass out of concepts they have already mastered. The adaptive Compass Learning Odyssey tailors the content toward concepts and skills the student still needs to master.

The district has also decided to blend instruction in its traditional classroom by adding online instruction. In the 2013-14 school year, the district began to purchase

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— Nawal Nader-French, St. Vrain eLearning Coordinator

In a Flipped Classroom, students watch recorded videos of lectures at home and spend class time applying the concepts they learned the previous night. Students can watch the video more than once if needed to understand the content.

iPad minis for each student in the sixth to 12th grade. The process will take several years. In the meanwhile, Nader-French has convened a Flipped Learning Collaborative, a small group of teachers that will meet regularly to learn together and design class activities. In a Flipped Classroom, students watch recorded videos of lectures at home and spend class time applying the concepts they learned the previous night. Students can watch the video more than once if needed to understand the content. Class time is reserved for time with the expert: the teacher, for application, in-depth analysis, discussion, and one-on-one and small group instruction. An example can be seen in the online video of a Longmont High School (St. Vrain) science classroom that transitioned to a Flipped model through the collaboration of Nader-French and teacher Anne Atherton.[25]

Teachers have found that recording a lecture or selecting an online program is the easier part. Constructing meaningful projects, challenging discussion questions, and aligned interventions for class time is much more challenging. The cohort will bring together five to six teachers who are interested in flipping their instruction and are willing to showcase their instruction as models for other teachers in the district. Teachers in the collaborative along with the eLearning coordinator will design high-quality lesson plans that they can implement next semester. Their work will be captured on video to share with the district.

"Designing online learning is the easy part," notes Nader-French. "The hard part we are discovering is for teachers to design blended learning that allows for

personalization and that takes purposeful planning." CeC has contracted with Nader-French to teach her Intro to Blended Learning and Instructional Strategies three-week summer online courses for interested Greeley-Evans 6 teachers.

SAN LUIS VALLEY

The introduction of blended learning in the San Luis Valley is part of a larger effort to improve student achievement in some of the state's poorest and most isolated Colorado districts. Bordered by the Sangre de Cristo mountain range to the east and the Great Sand Dunes to the north, the San Luis Valley stretches 122 miles along Colorado's southern border. The largest city is Alamosa with approximately 9,000 residents. The 14 school districts[26] in this deeply rural and agricultural part of the state serve a high population of poor students. The average student participation rate in the Federal Free and Reduced Lunch Program is 68 percent, but rates are higher in many of the districts. In the Sierra Grande School District, 90 percent of students are from low-income households, the highest rate in the state.

Besides poverty, the districts face the challenge of being isolated from the resources that Front Range dwellers take for granted, namely other educators. An eighth grade math teacher at Centauri Middle School in the North Conejos School District is the only eighth grade math teacher for miles. In Saguache County, one person teaches math at the Moffat Consolidated School District 2 middle and high school. Superintendents and principals in rural areas are also secluded. They must meet changes in the state's public education system, such as new teacher evaluation requirements and the Colorado Academic Standards, on their own.

STEPS FOR DISTRICT-WIDE BLENDED LEARNING IMPLEMENTATION

COMMIT

- Secure the school board's support prior to implementation and report to the board regularly thereafter.
- Empower the superintendent to be the sponsor of the initiative and lend his or her authority and enthusiasm to implementation.
- Hire a director to ensure a central point of accountability.
- Develop a Blended Learning Vision to provide a sense of direction for all stakeholders.
- Connect with other districts in the state to learn best practices.

ASSESS

- Conduct a district readiness assessment to ascertain strengths and weaknesses in technology and human capital.
- Determine the district's Strengths, Weaknesses, Opportunities, and Threats regarded blended learning capacity (SWOT analysis).
- Examine landline capacity, WiFi speed, and other physical structures. Fiber optic Internet is preferable.
- Examine existing contracts with LMS, software, hardware providers, and the teachers union. Consider state and district policies regarding technology, seat time, and other factors related to technology-aided instruction.

PLAN

- Create a step-by-step action plan that includes communication strategies, purchases, professional development, and program assessment.
- Create a budget framework and budget trajectory.
- Determine which schools and classrooms should start first and recruit teachers/schools.
- Provide guidance and support for school-level technology acquisition and connectivity upgrades to assure greater equity, quality, and consistency in blended learning applications. A strictly "Bring your own Technology" approach can create gaps in implementation, use of unreliable hardware, slow Internet access, and possible system-wide viral infection.

COMMUNICATE

- Develop a communications plan.
- Conduct a blended learning listening tour to hear concerns and disseminate information.
- Develop a data dashboard to track implementation.

TRAIN

- Provide coaching for school leadership.
- Grow a teacher implementation team.
- Provide ongoing professional development for teachers.

Adapted from John Branam's presentation "A National Journey of Innovation: Emerging Practices in District-wide Blended Learning Implementation," April 25, 2014

Students also took iPads home pre-loaded with learning software or books. The portability of the technology is ideal since many students lack Internet access at home.

Two years ago, 14 San Luis Valley school districts determined to combine their resources by working more closely with each other and several statewide partners. With the support of the Colorado Education Initiative (CEI, formerly the Colorado Legacy Foundation), the Colorado Department of Education (CDE), and the San Luis Valley BOCES, the 14 districts embarked on the Colorado Integration Project. The districts adopted a common calendar to enable teachers and leaders to meet, learn, and collaborate in person. At the beginning of the 2012-13 school year, project partners trained most San Luis Valley teachers in best practices regarding daily formative assessment, standards-based lesson planning, and instructional design. Teachers began meeting in Valley-wide grade level Professional Learning Communities (PLCs) to work together to apply these skills and align their curriculum and assessments to the new state standards. They have met five times a year for the past two years. Teachers will continue to meet with the support of the San Luis Valley BOCES.

The opportunity to collaborate and pool educator expertise has been invigorating and highly productive. Principals have been meeting throughout the year to collaborate on ways they can improve their instructional leadership and implement educator effectiveness tools aligned to Senate Bill 191.[27] Superintendents have met monthly with San Luis Valley BOCES Executive Director Nita McAuliffe to collaborate on improving system level leadership. "These leaders are working together to improve student achievement in ways that no one thought possible five years ago," says McAuliffe.[28] The PLC meetings will continue next year.

During 2013-14, as part of its Next Generation Learning project, CEI provided a grant to the 14 San Luis Valley districts to purchase iPads for 16 model classrooms to begin offering blended learning opportunities for students. With the CEI grant, the districts were able to purchase 120 iPads. Many of the districts committed funds to purchase more iPads bringing the total to 1,000 devices. The districts received assistance from the Littleton-based JDO Foundation, which trained teachers and administrators on how to upload learning applications and provided direction on the types of learning applications. The JDO Foundation also purchased Airwatch services for the districts for five years. Airwatch enables districts to upload applications to one or more iPads simultaneously. For example, a teacher or administrator can upload a reading application to all third grade class iPads at the same time. Educators can limit student access to websites or texting through Airwatch.

Throughout 2013-14, teachers in grade level PLCs discussed blended learning applications and methods. Schools provided teachers $50 iTunes gift cards to try out learning software. Mainly teachers used applications to enable students to practice literacy and math skills in the classroom or at home. Teachers and students also used Edmodo, a free Facebook-style membership website, to share assignments, ideas, grades, and other information. Students also took iPads home pre-loaded with learning software or books. The portability of the technology is ideal since many students lack Internet access at home. It is also advantageous for districts with limited Internet connectivity because users do not need to stay online after the application has been downloaded. Districts will need

time to upgrade their wireless capacity, particularly in older buildings, but in the meantime the iPads will continue to meet student needs.

CEI, CDE, and the education design group 2Revolutions, held a workshop for district leaders and teachers in the Center and Centennial school districts on how to develop classroom prototypes based on a short circle innovation process.

The process will enable districts to pilot blended learning in the classroom, test its effectiveness, make improvements, share lessons learned, and replicate the model over the course of a year. In the 2014-15 school year, the districts will pilot five Flipped Classrooms and five classrooms using other blended learning models. Teachers will put forth proposals over the summer. Center and Centennial teachers will share what they have learned with other San Luis Valley teachers at the PLC meetings.

Center School District Superintendent George Welsh is pleased with the first year of experience with classroom technology. "I foresee a time when technology will take the place of textbooks," he says, "Schools will no longer purchase textbooks but access adaptable, regularly updated technology available over the Internet."[29] Right now the cost of technology versus print resources is about the same for his district. In the future, it is likely to be less.

By investing in technology and teacher time, with the help of CEI, CDE, and the JDO Foundation, the San Luis Valley has taken a step closer to that future. Full implementation will take time, but the districts' embrace of blended learning and Valley-wide collaboration herald a new era for this once isolated region.

Landmark Academy

Many Colorado charter schools are also doing innovative work through blended learning, though they fall outside the focus of this paper. For example, CEI supports blended learning implementation at Landmark Academy, a Commerce City charter school serving 757 students in kindergarten through eighth grade.

In spring 2013, the principal and teachers in grades K-2 collaborated with Education Elements. They developed a Station Rotation model for their 90-minute English language arts block to be implemented in fall 2014. In the model, groups of five to six students learn at each of five stations for roughly 20 minutes. At two of the stations, students work on digital content either learning literacy skills on i-Ready software or reading a book on myON, a personalized reading program that tracks comprehension. At the three other stations, students study with the teacher or work independently or in groups on specified projects, worksheets, or other activities.

Landmark Academy has seen dramatic increases in the percentage of K-2 students meeting academic growth targets. Principal Matt Carlton is pleased with the results, and plans on introducing blended learning in grade three next year. To school leaders interested in blended learning he offers an important caution. "Do not go buy a bunch of computers, and expect it all to work out," he said. "It's not a silver bullet. It's hard work. In some ways harder than traditional teaching, but it's smarter hard work."

Conclusion

Blended learning implementation in Falcon School District 49, Greeley-Evans School District 6, St. Vrain Valley School

Landmark Academy has seen dramatic increases in the percentage of K-2 students meeting academic growth targets.

> **It has been hard work, but "smarter hard work," to use principal Matt Carlton's phrase. Early data suggest that blended learning has improved course completion and achievement...**

District, and in the San Luis Valley varies considerably. Each district has different strategies for covering costs, developing buy-in, using existing resources, collaborating, partnering with other organizations, and handling challenges.

Greeley-Evans 6 and the 14 San Luis Valley districts, with the support of partner organizations, are piloting blended learning models with the intent of expanding system-wide. Falcon 49 and St. Vrain started by blending face-to-face learning with online learning at their virtual schools and are now introducing blended learning in brick-and-mortar classrooms.

For all the districts, collaboration, professional development, and innovation have all been important components of the blended learning execution. In each case, the decision to embark on blended learning was motivated by a desire to improve student achievement, to give teachers additional instructional tools, and to take advantage of emerging instructional technology that can bring efficiency and potential cost savings.

It has been hard work, but "smarter hard work," to use principal Matt Carlton's phrase. Early data suggest that blended learning has improved course completion and achievement at Falcon 49 and St. Vrain's virtual schools, in St. Vrain's eCredit Recovery program and in pilot brick-and-mortar classrooms in Greeley-Evans 6 and in the San Luis Valley districts. System-wide implementation is too recent and too incomplete to surmise the impact at that level, however. Such evaluation will be possible in the future. Until then, the experience of these early adopters offers a roadmap for other Colorado districts to follow.

QUESTIONS FOR SCHOOL DISTRICTS

- Do we want to implement blended learning on a system-wide basis or simply allow schools to experiment independently?

- What do we want to accomplish in expanding blended learning opportunities for students?

- What system-level innovations will enable us to more effectively and efficiently support online and blended learning?

- Who is in the best position to lead blended learning implementation?

- How can we best work with teachers to design high-quality blended learning classroom experiences?

- How do we identify early adapters?

- How do we share what they have learned?

- How can we add face-to-face learning opportunities for students enrolled in our online programs?

- How can we add blended learning opportunities for students who attend an Alternative Education Campus?

- How do we inform and create buy-in among board members, teachers, administrators, parents, and students?

- How will we cover costs for hardware, software, Internet, a LMS, and professional development?

- How do we determine which LMS, software, and Internet technology is right for us?

- How do we equitably supply hardware and software to schools?

- What is the timeline for implementation?

- How will we measure success?

APPENDIX A. COLORADO RESOURCES

The following Colorado organizations provide information and free and fee-based services.

Colorado Department of Education
http://www.cde.state.co.us/onlinelearning

Since 2007, the Office of Blended & Online Learning provides information about the state's multi- and single-district online schools and programs. The office certifies multi-district online schools, funds research about online programs, and provides technical assistance to online school operators and districts, and provides information about blended and online learning for parents, teachers, and administrators. Each year, the Division of Innovation, Choice, and Engagement and the Office of Blended and Online Learning recognize online and blended learning teachers and counselors for excellence in their field.

Colorado Education Initiative
http://www.coloradoedinitiative.org/

The Colorado Education Initiative, formerly the Colorado Legacy Foundation, works with the Colorado Department of Education (CDE), schools and districts to improve student achievement. One of its initiatives, Next Generation Learning, seeks to increase personalized teaching and learning experiences. CEI has supported the implementation of high quality blended learning opportunities at the district and school level.

Colorado eLearning Collaborative (CeC)
http://coloradoelearning.org/

The Colorado eLearning Collaborative (CeC) supports the expansion of high-quality blended and online learning opportunities by providing consulting, professional development, evaluation, strategic planning, and other services to Colorado school districts and schools. Member districts and schools receive a discount on vender services such as Learning Management Systems. CeC also works with charter schools. Services include the development of a blended learning vision, board training, professional development, and consortium pricing. On April 25, 2014, CeC co-hosted a blended learning symposium with Greeley-Evans School District 6, The Learning Accelerator, and other partners.

Colorado Online Learning (COL)
http://www.coloradoonlinelearning.org/

Colorado Online Learning (COL) offers more than 70 standards-aligned online courses developed by Colorado licensed teachers. COL, the state's largest supplemental online course provider, receives individual course enrollment fees from districts and a state subsidy. COL works with 80 to 100 districts each semester.

The Donnell-Kay Foundation
http://dkfoundation.org/

The Donnell-Kay Foundation (DKF) supports research, and the dissemination of research, into the implementation of blended learning in Colorado. DKF also funds implementation through local partner organizations.

eNetColorado
http://www.enetcolorado.org/

eNetColorado is a partnership of 75 school districts, 14 BOCES, and over 20 educational and community-based organizations. eNetColorado provides professional development on blended and online learning and access to the Digital Resource Exchange and Marketplace (DREAM), an online repository of links to low- or no-cost resources such as Khan Academy, Smithsonian Education historical resources, and Colorado Lessons on Local Government from the Colorado Municipal League. Resources are rated by users.

Evergreen Education Group
http://evergreenedgroup.com/

The Evergreen Education Group conducts research and provides fee-based consulting for schools implementing online and blended learning, including needs assessment, budgeting, technology and content acquisition, and professional development.

Appendix B. National Resources

The following national organizations provide information about blended learning. The list does not included fee-based consulting groups.

BlendedLearningNow

http://www.blendedlearningnow.com/

BlendedLearningNow, a project of the Cities for Education Entrepreneurship Trust (CEE-Trust), aggregates blogs, research, news, videos, and case studies about blended learning.

Clayton Christensen Institute for Disruptive Innovation

http://www.claytonchristensen.com/

The Clayton Christensen Institute for Disruptive Innovation offers research papers, policy briefs, videos, and case studies regarding education innovations including blended learning.

Digital Learning Now!

http://digitallearningnow.com

Digital Learning Now! is an initiative of the Foundation for Excellence in Education (ExcelinEd) to promote state policies that advance high-quality digital learning. Their "Smart Series Guide to EdTech Procurement" provides school leaders strategies in how to best select and purchase learning technology.[30] "Blended Learning Implementation Guide Version 2.0" provides a step-by-step guide to starting a blended learning program, including setting goals, building support, financing, funding, professional development, communication, assessment, and continuous improvement.[31]

iNACOL

http://www.inacol.org/

The International Association for K-12 Online Learning (iNACOL) researches and develops standards for the development of high-quality online, blended, and competency-based education, provides professional development and networking opportunities, and advocates for policy reform.

The Learning Accelerator

http://learningaccelerator.org/

Funded by the Bill & Melinda Gates Foundation and the Jaquelin Hume Foundation, the Learning Accelerator works with states and school districts to implement blended learning programs at the system level.

Endnotes

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3 U.S. Department of Education Office of Planning, Evaluation, and Policy Development Policy and Program Studies Service, "Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies," Revised September 2010, http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf.

4 John F. Pane et al., "Does an Algebra Course with Tutoring Software Improve Student Learning?" RAND Corporation (2013), http://www.rand.org/content/dam/rand/pubs/research_briefs/RB9700/RB9746/RAND_RB9746.pdf.

5 See Carnegie Learning overview at http://www.carnegielearning.com/secondary-solutions/blended/.

6 John Branam, The Learning Accelerator, telephone conversation with the author, May 29, 2014.

7 Ibid.

8 Deagan Andrews, Greeley-Evans School District 6, telephone conversation with the author, May 27, 2014.

9 https://www.khanacademy.org.

10 Deagan Andrews and Stacie Datteri, "Scaling Excellence: Greeley-Evans School District 6 Blended Learning Report," Greeley-Evans School District 6 report prepared for Dr. Ranelle Lang, Superintendent, and the Board of Education, March 24, 2014, http://www.greeleyschools.org/cms/lib2/CO01001723/Centricity/Domain/47/Blended%20Learning%20Report%20032014.PDF.

11 http://learningaccelerator.org/media/91350018/BL%2District%20Assessment-FIN.pdf.

12 Greeley-Evans School District 6, E-Learning Services, http://www.greeleyschools.org/Page/13456.

13 Andrews, May 27 phone conversation.

14 Branam, May 29 phone conversation.

15 Apricot Truitt, Jackson Elementary School, telephone conversation with the author, May 29, 2014.

16 Tammy Hermance, Ann K Heiman Elementary School, telephone conversation with the author, May 29, 2014.

17 Branam, May 29 phone conversation.

18 Falcon School District 49 Strategic Plan, http://d49.org/modules/cms/pages.phtml?pageid=302014&sessionid=010e4733fa1a1b6542264e14a52ac9c4&sessionid=010e4733fa1a1b6542264e14a52ac9c4.

19 "Alternative Education Campuses (AECs) are defined as schools that have a specialized mission and serve either a special-needs or at-risk population, where more than 95% of students have either an Individualized Education Program or meet the definition of a 'high-risk student.'" See http://www.cde.state.co.us/accountability/policy_guidance_accountability_for_aecs.

20 Kim McClelland, Falcon School District 49, telephone conversation with the author, June 3, 2014.

21 Kindra Whitmyre, Colorado Digital Board of Cooperative Education Services, telephone conversation with the author, May 30, 2014.

22 Dave Knoche, Falcon Virtual Academy, telephone conversation with the author, June 2, 2014.

23 McClelland, June 3 phone conversation.

24 Nawal Nader-French, St. Valley School District, telephone conversation with the author, June 2, 2014.

25 "Transforming Instruction Through Flipped Learning," http://www.youtube.com/watch?v=sUT48ljCrcQ.

26 The 14 San Luis Valley school districts are as follows: Alamosa School District RE-11J, Centennial School District R-1, Center Consolidated School District 26JT, Creede School District, Del Norte Consolidated School District, Moffat Consolidated School District 2, Monte Vista School District, Mountain Valley School District RE-1, North Conejos School District RE 1-J, Sanford School District 6-J, Sangre de Cristo School District RE-22J, Sargent School District RE-33J, Sierra Grande School District R-30, South Conejos School District RE-10.

27 Colorado General Assembly, Senate Bill 10-191, http://www.leg.state.co.us/CLICS/CLICS2010A/csl.nsf/fsbillcont3/EF2EBB67D47342CF872576A80027B078?Open&file=191_enr.pdf. See also Colorado Department of Education, Educator Effectiveness, http://www.cde.state.co.us/educatoreffectiveness.

28 Nita McAuliffe, San Luis Valley BOCES, telephone conversation with the author, June 3, 2014.

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30 John Bailey et al., "Smart Series Guide to EdTech Procurement," Digital Learning Now! (2014), http://digitallearningnow.com/site/uploads/2014/05/Procurement-Paper-Final-Version.pdf.

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