

# BLENDED LEARNING

## Lessons from Best Practice Sites and the Philadelphia Context

PERC Research Brief  
*September 2015*



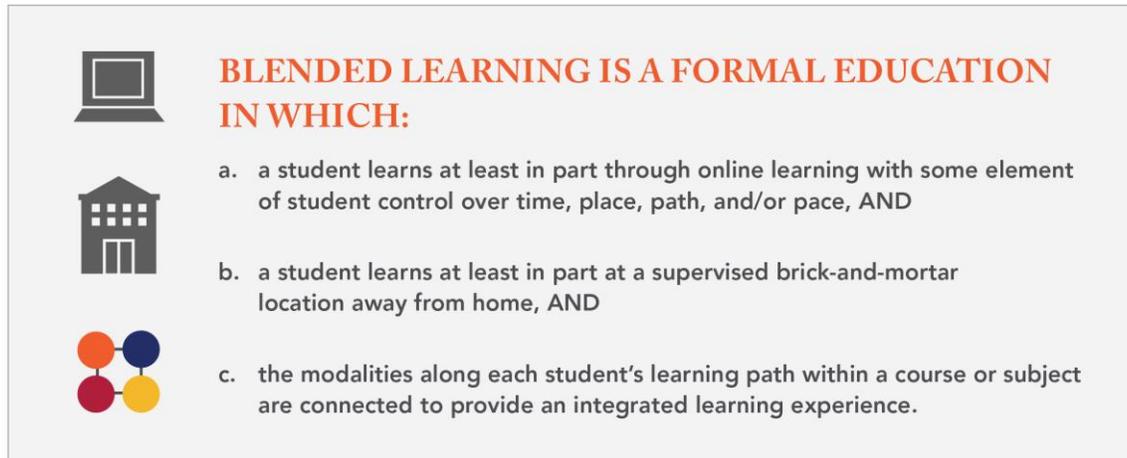
**Authors:**

Jessica K. Beaver, Ph.D.  
Brittan Hallar, Ph.D.  
Lucas Westmaas  
Katie Englander

## What is Blended Learning? A Literature-Based Definition

We draw our working definition for blended learning from Christensen, Horn, and Staker (2013)<sup>1</sup> (see Figure i below).

Figure i. A Definition of Blended Learning



**BLENDED LEARNING IS A FORMAL EDUCATION IN WHICH:**

- a student learns at least in part through online learning with some element of student control over time, place, path, and/or pace, AND
- a student learns at least in part at a supervised brick-and-mortar location away from home, AND
- the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience.

## Blended Learning Models

The literature suggests four discrete models of blended learning in practice.<sup>2</sup> We describe each of the four models below, explaining how each model incorporates the different elements of the blended learning definition into its approach.



**1. Rotation Model.** In this model, students rotate between learning paths or “modalities”—one of which is online learning—either on a fixed schedule or at the teacher’s discretion. In practice, these rotations might mean that a student stays at her desk, but switches between a paper-and-pencil instruction and online learning on a tablet or laptop; it also might involve students trading the classroom for a computer lab for a particular lesson. For example, this model includes the flipped classroom where students participate in online learning to access the content needed for the course and then attend the brick-and-mortar school for face-to-face, teacher-guided practice or projects.



**2. Flex Model.** Similar to the individual rotation model, the flex model features students working on a customized schedule that rotates between modalities, one of which is online learning. The flex model is not fixed but fluid, allowing for real-time changes in schedules to meet ever-changing student learning needs.



**3. “A La Carte” Model.** The a la carte model—also known as the “self-blend” model—allows students to design their educational experience by selecting specific online courses to supplement their traditional in-school coursework. For the online coursework component, the teacher-of-record is virtual and learning occurs either in the school or off-site. This approach may be employed when schools do not have certain courses available on-site.



**4. Enriched-Virtual Model.** In this model, students learn primarily online, but split their time between the brick-and-mortar school and off-site. It is a “whole school experience,” which means that it is a comprehensive approach to schooling (as opposed to the course-by-course approach in the flex and a la carte models). The teachers-of-record are primarily virtual, although teachers provide supplemental support in the brick-and-mortar environment as well.

<sup>1</sup> Clayton Christensen Institute for Disruptive Education. (2013). *Is K-12 blended learning disruptive? An introduction to the theory of hybrids*. San Mateo, CA: Christensen, Horn, & Staker. Retrieved from: <http://bit.ly/1ufTtgZ>

<sup>2</sup> *ibid.*

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### EXECUTIVE SUMMARY

The Philadelphia Education Research Consortium—or PERC—was launched in August 2014 as an innovative partnership designed to provide research and analyses on some of the city’s most pressing education issues. This partnership was forged among the School District of Philadelphia, Philadelphia’s charter school sector, and Research for Action (RFA). PERC draws on the rich research expertise in Philadelphia—both within RFA and from three of the city’s major research universities—to conduct research that meets the information needs identified by representatives of Philadelphia’s public schools.

Building on our initial study of blended learning definitions,<sup>3</sup> empirical evidence, and conditions for implementation success, this Research Brief examines educators’ on-the-ground perspectives about blended learning implementation. In our two-pronged study approach, we:

- 1) Explore best practices in implementation at four sites: New York City’s iZone schools; District of Columbia Public Schools (DCPS); Lebanon, PA School District; and E.L. Haynes Public Charter School in Washington, DC; and
- 2) Present findings from a local survey of technology coordinators and teachers in the School District of Philadelphia and the city’s charter partners regarding the capacity of schools to implement blended learning models and strategies.

Below, we highlight key findings from the qualitative site visits in three areas: 1) product and program procurement; 2) school-level structures; and 3) system-level supports. We then provide key findings from the local survey.

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<sup>3</sup> <http://www.phillyeducationresearch.org/projects/blended-learning/>

## Lessons Learned: Products and Programs

Table ES1. Lessons Learned in Product and Program Procurement

FINDING	EXPLANATION
Procurement Processes for <b>MAJOR INVESTMENTS</b> Varied Greatly Across Sites	The sites were on a continuum when it came to procurement, from the most informal to the most formal. On one end of the continuum, there was an internal approach that relied on teacher reports and small-scale piloting, and on the other end a formal Request for Proposals (RFP) was released.
Districts and Schools Used a Multi-Step Approach to Determine Product Fit for <b>MAJOR INVESTMENTS</b>	Sites went through a three-step process to determine technology tool alignment and dosage requirements, alignment to blended learning models and learning goals, and pricing and licensing.
Districts and Schools Encouraged Teachers to Pilot <b>MINOR INVESTMENTS</b>	At three of the four sites, teachers were encouraged to find and implement their own programs and products in their classroom.

## Lessons Learned: School-Level Structures

Table ES2. Lessons Learned in School-Level Structures

FINDING	EXPLANATION
Sites Varied in Locus of Control When Searching for “Best Fit” Blended Learning Model(s)	Two sites utilized a formal, top-down strategy to determine blended learning models for their schools, whereas the other two sites took a bottom-up approach wherein school staff had more autonomy in choosing and defining the type of model(s) they used in their classrooms.
Strong School Leadership was Key to Establishing Clear Expectations and Goals for Blended Learning	Particularly in the first year of implementation, school leaders across the four sites noted the importance of clearly communicating the underlying goals of the blended learning strategy to teachers.
Sites Continuously Adapted Approaches to Meet Evolving Blended Learning Needs	Although schools employed different strategies to determine their blended learning models, sites made course corrections related to infrastructure and implementation at numerous points to keep pace with evolving needs and emerging knowledge about blended learning and the needs of the school, teachers, and students.
Sites Employed Multiple Strategies for Blended Learning Professional Development	All four sites implemented blended learning professional development but used a variety of strategies, including internal district or school opportunities, informal peer-to-peer strategies, and an externally-driven fellowship model. Most sites pursued multiple strategies, often simultaneously.

# Lessons Learned: System-Level Supports

Table ES3. Lessons Learned in System-Level Supports

FINDING	EXPLANATION
All Sites Used a Scale-Up Model to Gradually Ensure Alignment to System-Wide Goals	Across all four sites, district and charter leaders treated the implementation of blended learning strategies as an experiment of sorts that could help certain pockets of students and schools meet district goals. The sites all piloted blended learning strategies and then scaled them to encompass larger numbers of students, grade levels, and/or schools.
All Sites Pursued Multiple External Sources of Funding to Support Aspects of Their Work	Administrators across the four sites listed several grants they had received to support the initial capital investment in technology tools, as well as the ongoing support to scale up existing strategies and pilot new strategies.
Blended Learning Approaches Were Not Employed to Cut Staffing Positions	Administrators at all four sites stressed that their system’s decision to adopt a blended learning approach was completely divorced from decisions about staffing or budgetary allocations.
Teacher Recruitment and Teacher Attrition Were the Most Salient Human Capital Concerns	Across the four sites, but especially at the iZone and at E.L. Haynes, where district and school administrators had more control over teacher recruitment, administrators cited the importance of recruiting teachers who were ready and willing to teach using a blended approach to instruction.
Sites Incorporated Plans for Continuous Evaluation and Improvement	At each site there was consensus that blended learning would continue in the district as an instructional strategy, and each site dedicated resources to ensuring continual evaluation and improvement.

## Survey Findings

In an effort to examine the School District of Philadelphia’s capacity to implement blended learning models in its schools, we surveyed technology staff within District and charter schools regarding four areas related to blended learning: capacity and interest; technology and infrastructure; current blended learning models; and professional development and integration.

### Capacity and Interest

- **Among the schools that responded,<sup>4</sup> the majority had a formal technology position, although staff filling technology positions frequently had multiple roles.** Of the 108 respondents, 79% (n=85) reported having a formal technology position, while 20% (n=22) reported an informal position.<sup>5</sup>
- **Technology coordinators identified technology support as their most common responsibility.** Nearly all respondents (97%) reported that they provided tech support as part of their job, exceeding all other categories by more than 10 percentage points.
- **64% of Survey respondents are interested in learning more about blended learning.** Nearly two thirds (64%) of question respondents (n=89) were interested in hearing about more ways to institute blended learning at their school.

<sup>4</sup> Given that this survey was sent to technology coordinators, it is possible that schools where the role of technology coordinator is less important might not have responded. In these schools the part time “technology coordinator” might have many different roles and might not have time nor have interest in responding to this survey.

<sup>5</sup> One respondent (1%, n=1) reported that he/she did not hold a technology position.

## Technology and Infrastructure to Support Blended Learning

- **Technology devices are primarily based in computer labs or mobile carts.** All survey respondents reported that students have access to some technology during the school day, and many reported that students have multiple ways to access personal computing devices.
- **Technology coordinators believe there is a need for more mobile carts and one-to-one computing devices.** While nearly two thirds (65%) of respondents reported a sufficient number of computer labs at their school, only 30% reported that they had a sufficient number of mobile laptop or tablet carts, and only 22% reported a sufficient amount of one-to-one in-classroom technology.
- **Technology users experience slow connectivity speeds when using their schools' Internet connections.** The vast majority (93%) of survey respondents reported that they encountered slow connectivity speeds either occasionally or most of the time when accessing online content through their school's Internet connection.

## Blended Learning Models in Place

- **At nearly every school, at least some teachers integrate personal computing devices into classroom lessons.** The vast majority (99%) of survey respondents (n=75) reported that at least some teachers integrate students' use of personal computing devices into classroom lessons.
- **Many schools had blended learning models in place during the 2014-15 school year.** A majority (74%) of survey respondents (n=91) reported that their school used at least one blended learning model (Station Rotation, Flipped Classroom, Flex, or A La Carte).

## Professional Development and Integration of Blended Learning

- **Few schools offered blended learning professional development during the 2014-15 school year.** Few respondents (14%, n=91) reported that their school provided blended learning professional development opportunities for teachers during the 2014-15 school year.
- **Survey respondents were interested in future blended learning professional development opportunities focused on instruction and integration.** A strong majority of respondents (86%) reported that the most important topic for future blended learning professional development was technology integration and instruction, such as classroom management, assessment, and differentiation.

## Recommendations

Below, we provide recommendations for Philadelphia public schools to consider as they move towards implementing blended learning strategies.

Table ES4. Recommendations

RECOMMENDATION	EXPLANATION	IMPLICATIONS
<b>Start Small</b>	Although they took different approaches, all four Best Practices sites piloted blended learning before they slowly started to scale-up the effort. The survey data show that blended learning models are already taking root in certain Philadelphia schools.	Follow the best practice of piloting new blended learning models and support programs in a subset of schools and/or classrooms before scaling to a broader set of students, grades, or schools.
<b>Invest in School Leadership</b>	Obtaining the buy-in of school leadership was key to the success of blended learning implementation across all four best practice sites.	Began with individual schools, then moved to a feeder pattern strategy. Now at 17 schools district-wide.
<b>Develop a Plan for Blended Learning Professional Development</b>	Even though sites conceptualized and deployed professional development in different ways, it is extremely important to map out a plan for professional development that is intentional and targeted to the needs of the teachers and school staff.	Find school leaders to guide this work to not only implement in their schools but disseminate best practices to other schools throughout the Philadelphia school system.
<b>Assess Device Needs on a Regular Basis</b>	The need for hardware to match blended learning model needs was well cited during site visits.	Take inventory of existing hardware availability, as well as any changes that need to be made to best match the needs in individual schools.
<b>Invest in Connectivity and Have a Backup Plan</b>	All the best practices sites expressed the importance of connectivity, but also noted the importance of having a backup plan if connectivity was an issue. In Philadelphia, survey respondents reported that they encountered slow connectivity speeds when accessing online content through their school's Internet connection.	Recognize the importance of a contingency plan and rely on technology coordinators for tech support to help the school formalize plans and strategies for continued improvement.
<b>Invest in Evaluation and Research</b>	Each of the four best practices sites had a plan to continually evaluate the success of blended learning in their schools and refine implementation.	Invest in evaluation and research to improve the early implementation and eventually measure student academic gains over time.





## Blended Learning: Lessons from Best Practice Sites and the Philadelphia Context

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### Introduction

Over the course of the last 10 years, policymakers and practitioners alike have turned to blended learning as a way to promote innovation, personalize the learning experience for students, and, ultimately, raise student achievement. Given these potential benefits of blended learning, the Philadelphia Educational Research Consortium is conducting a three part study of blended learning. Building on our initial research brief defining blended learning models and conditions to support implementation, this Phase 2 Research Brief examines educators' on-the-ground perspectives about blended learning implementation.

Below we provide a brief review of Phase 1 and provide a snapshot of this Phase 2 report.

### Review of Phase I: Defining Models and Examining Conditions to Support Implementation

Our [Phase I Research Brief](#) examined the research base on blended learning to identify a common working definition of blended learning, and to present a set of literature-based conditions for implementation that could be used to successfully integrate blended learning approaches into instructional improvement strategies.

#### THE PHASE I BRIEF CONTAINED THREE SECTIONS:

1. **Definitions:** A literature-based definition of blended learning that explained the individual elements of various established blended learning models and distinguished between blended learning and other technology-enriched instructional approaches.
2. **Empirical Evidence of Effectiveness:** A summary of empirical evidence on blended learning effectiveness using a framework that divided the existing research into three categories: meta-analyses of blended learning impact; discrete studies of program impact; and individual studies of school-level blended learning models. Rigorous empirical research on blended learning is still in its infancy.
3. **Conditions for Implementation:** Essential considerations for schools and districts during the implementation process, ranging from the most narrow concerns (i.e., selection of appropriate supportive programs and products) to the broadest concerns (i.e., system-wide conditions to support blended learning). Examples to illustrate how districts and schools have tackled these concerns were provided.

## Scope for Phase II: Lessons from Best Practice Sites and the Philadelphia Context

In Phase II, we use the “Conditions for Successful Implementation” outlined in our Phase I Brief to explore best practices in implementation at four sites: New York City’s iZone schools; District of Columbia Public Schools (DCPS); Lebanon, PA School District; and E.L. Haynes Public Charter School in Washington, DC.

Simultaneously, we conducted a survey of technology coordinators and teachers in the School District of Philadelphia and the city’s charter partners that examined the capacity of their schools to implement blended learning models and strategies. We also provide recommendations that synthesize the capacity needs identified in the survey with some best practice lessons learned from the site visits.

This Phase II brief is organized into the following sections:

- I. External Best Practices from Four Sites
- II. Internal Capacity and Interest in Blended Learning in Philadelphia’s Public Schools
- III. Recommendations
- IV. Phase III Pilot Study Overview

### I. Examples of Best Practices from Four Sites

In this section, we provide a brief overview of the following:

- Data collection and methodology;
- Brief overviews of the four sites; and
- Key findings, which are organized in three categories—product and program selection, school-level considerations, and system-level considerations—to align with the conditions of successful implementation outlined in the Phase 1 Research Brief.

#### Data and Methods

We chose best practice sites based on two criteria:

1. Documented success implementing blended learning strategies;<sup>6</sup> and
2. Student population similar to Philadelphia with geographic proximity.

Sites were chosen in close collaboration with the School District of Philadelphia and the city’s charter sector to ensure that the focus of data collection was both relevant and representative of the needs of Philadelphia public school leaders.

Qualitative data collection from the site visits included the following:

- Review of relevant documents and background materials about each school/district and its approach to blended learning;
- Interviews<sup>7</sup> with key district administrators, principals, and/or technology leaders (e.g., blended learning coordinators, technology coaches or facilitators); and
- Focus groups at study sites with teachers who were involved in carrying out the blended learning model(s).

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<sup>6</sup> Documented success is used here in reference to external reports, media attention, and education experts’ perceptions of the success of blended learning implementation.

<sup>7</sup> The number of interviewees varied by site and depended in part on the size of the district/school and related blended learning staffing structures.

We used qualitative analysis software, Atlas.ti, for all coding and analysis. Once the data were coded, researchers worked within the codes to examine themes from the data. Our analysis examined commonalities and differences in implementation approaches across the sites, examining both the successes and challenges of blended learning model implementation.

## Brief Overview of the Four Sites

Researchers gathered data from eight schools in four sites: New York City's iZone schools, the District of Columbia Public Schools (DCPS), Lebanon, PA School District, and E.L. Haynes Public Charter School<sup>8</sup> in Washington, DC.

The four sites varied greatly in terms of the types of blended learning models they employed, the devices and platforms they used to support their strategies, their vendor selection processes, and their general strategies for implementation and professional development. Table 1 highlights key features of blended learning implementation at each site.

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<sup>8</sup> E.L. Haynes Public Charter School has two campuses in the Washington, DC area that serve students in grades preK-12.

Table I. Key Features of Blended Learning at Sites

	NYC iZone	DCPS	LEBANON, PA	E.L. HAYNES <sup>10</sup>
<b>Schools Visited</b>	MS, HS	ES, MS	HS	ES, MS, HS
<b>History</b>	In 2010, the New York City (NYC) Department of Education established the iZone, an office dedicated to supporting a personalized learning environment in a community of schools to accelerate college and career readiness for students. The iZone also includes access to the iLearnNYC <sup>9</sup> set of trainings and resources on blended learning integration.	The District of Columbia Public Schools (DCPS) began a Blended Learning Pilot Program in two elementary schools in 2013, using an in-class station rotation model for both reading and math. DCPS has since expanded the program to 17 schools. A larger set of schools is also implementing aspects of blended learning models (e.g. offering credit recovery, AP courses, etc.).	Lebanon High School piloted a station rotation model during spring 2012 in eight classrooms, and then expanded that model to nearly all teachers in the high school by fall 2013. The station rotation model has three stations: direct instruction; individual learning; and collaborative (i.e. small group) learning. Lebanon High School also uses a flex model for credit recovery over the summer.	E.L. Haynes includes an elementary school for grades preK-5; a middle school for grades 6-8; and a high school for grades 9-12. The adoption of blended learning happened organically over time, primarily through teacher-driven, independent pilots. Within the past two years, staff have become increasingly strategic about matching digital content with academic needs, systematically reviewing the design and implementation of its varied models as well as the degree to which these programs are promoting positive student outcomes.
<b>BL Models Employed</b>	 (Flipped Classroom, Station Rotation, Flex, A La Carte)	 (Station Rotation, Flex)	 (Station Rotation, Flex)	 (Lab Rotation, Station Rotation, Flex)
<b>Platforms/ Devices</b>	iZone platform resources, devices varied	Single sign-on, desktops	Single sign-on, iPads	Universal username and password
<b>Vendor Selection</b>	Formal RFP	Internal vetting	External consultant	Internal vetting
<b>Implementation</b>	iZone start-up support, teacher created tools and PD	Training for tech leadership through external funding, strong district role in start up	Strong district leadership and external partnership role, pilot phase	Strong tech coordinator leadership, training for tech leadership through external funding, informal and in-school professional development amongst staff

 Rotation (Flipped Classroom, Lab Rotation, Station Rotation)  Flex  A La Carte

<sup>9</sup> <http://izonenyc.org/about-izone/>

<sup>10</sup> Researchers did not conduct a site visit of the E.L. Haynes Public Charter School but did have in-depth phone interviews with key administrators and staff and attended a teacher-led webinar on blended learning strategies in the high school.

### Lessons Learned: Products and Programs

In our Phase 1 Research Brief, we highlighted the importance of selecting programs and products that “fit” with the needs and capacities of schools and districts. There are a multitude of products on the market, with many vendors actively touting alignment to specific blended learning models, technology devices and platforms, and curriculum. In our review of “Conditions for Successful Implementation,” we highlighted a series of important questions related to selecting the products and programs that will support blended learning initiatives (Table 2).

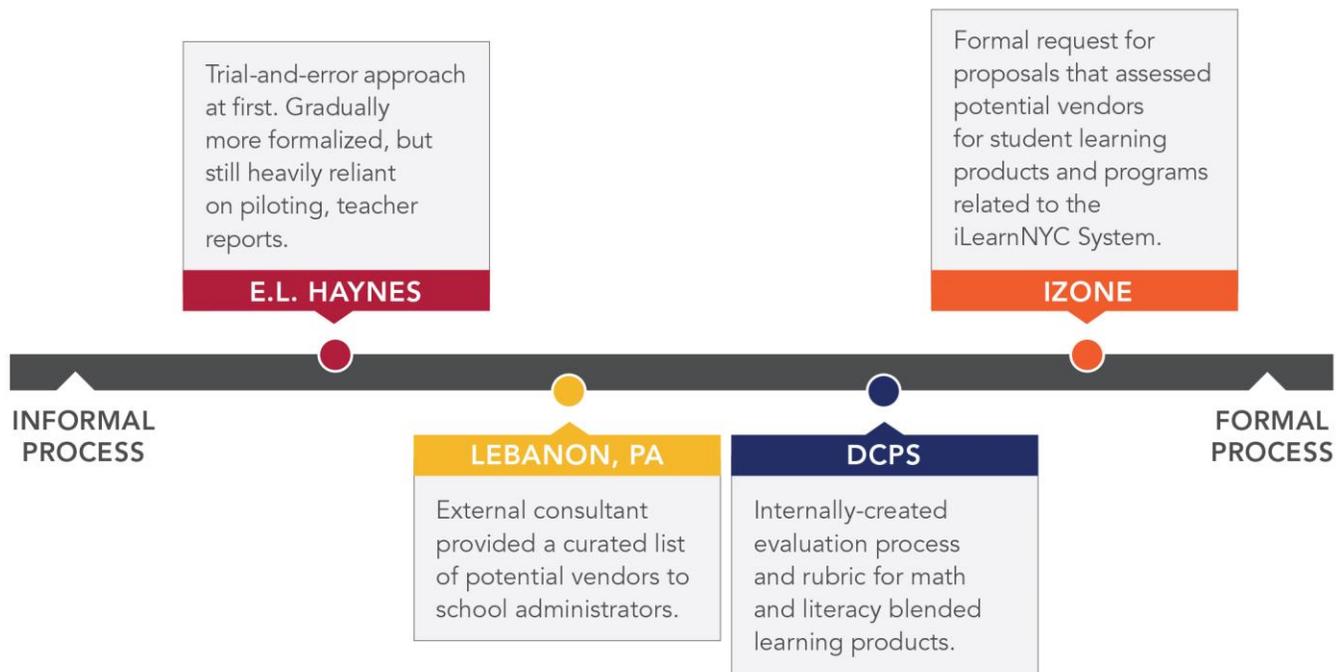
Table 2. Blended Learning Product/Program Selection Checklist

PRODUCT/PROGRAM CHECKLIST	Y	N
Is the product/program aligned to existing curriculum?		
Is the product/program aligned to the blended learning model?		
Can the product/program be supported by existing technology tools?		
Is the product/program a worthy investment from a cost-benefit perspective?		
Does the product/program show evidence of success?		

Below, we highlight lessons learned from the site visits in the area of products and program selection. In our analysis, we distinguish between **MAJOR** investments in new programs and products (i.e., purchases that span multiple classrooms, grade levels, or schools within a district) and **MINOR** investments (i.e., teacher-driven classroom initiatives or small pilot programs at the classroom or grade level). As one administrator explained, she likes to let smaller investments “bubble up” from teachers, but broader deployment would require more support, as well as a “substantial vetting process.”

**Finding 1: Procurement Processes for MAJOR INVESTMENTS Varied Greatly Across Sites.** The four sites approached the procurement process for major investments in very different ways. Figure 1 below displays the processes the sites utilized for procurement on a continuum, from the most informal to the most formal. On one end of the continuum, there was an internal approach that relied on teacher reports and small-scale piloting, and on the other end a formal Request for Proposals (RFP) was released.

Figure 1. Procurement Process Continuum



When **E.L. Haynes** first started implementing blended learning, respondents reported that procurement was a trial-and-error and iterative process. The high school principal reported that they first tried a program based on a teacher recommendation, but then decided not to renew it at the end of the year because it was poorly received by other teachers. In subsequent years, the procurement process was formalized to some degree by the technology innovation director, who spent her first year on the job inventorying all the existing programs and determining which programs would stay or go. Even within this inventory process, the high school in particular leaned heavily on learning from teachers who piloted certain programs or products in their classrooms.

The process in **Lebanon, PA** was driven by an external consulting group that performed a “gap analysis” of existing technology tools and programs, and then evaluated potential vendors against both the identified gaps in services, as well as compatibility with the district’s selected station rotation model. District and school administrators received a curated list of free products and fee-for-service products, and then made decisions around the best fit for the school in consultation with the external consultant.

**DCPS** evaluated potential vendors using an internally-created evaluation process and rubric for math and literacy blended learning products. DCPS rated potential vendors on a 0-4 scale for each component of interest and then multiplied those ratings by a weight that was assigned to each component. The final tallied scores were evaluated across interested vendors, with separate rubrics for math and literacy products.

Finally, the **iZone** prepared a formal RFP that assessed potential vendors for student learning products and programs related to the iLearnNYC System.<sup>11</sup> Interested vendors were required to complete a

<sup>11</sup> iLearnNYC is a blended learning program where online content complements in-class teaching and allows students more control over the pace at which they learn, where they learn, and what they learn. <http://izonenyc.org/initiatives/ilearnnyc/>

program plan or narrative, demonstrate organizational capacity, demonstrate effectiveness, and list all pricing information. The iZone ultimately approved 16 vendors.

**Finding 2: Districts and Schools Used a Multi-Step Approach to Determine Product Fit for MAJOR INVESTMENTS.** Sites went through a three-step process to determine technology tool alignment and dosage requirements, alignment to blended learning models and learning goals, and pricing and licensing. These steps are detailed below.

Step 1: Alignment to devices, platforms, dosage, and scheduling requirements. Across the four sites, district administrators completed basic vetting of interested vendors to determine the degree to which their products aligned to key technology specifications and capacity requirements. Administrators across the sites stressed that products and programs could be the best thing on the market for students, but were ultimately meaningless if they couldn't be supported by existing technology. At E.L. Haynes, for example, the technology leader reported that her first step after analyzing data to determine specific student needs was to examine, *“our capacity to implement the program with fidelity in terms of dosage and scheduling requirements, staffing and training needs, cost, and device compatibility.”*

The other sites described a similar process. In Lebanon, PA, the first question that administrators asked was whether products and programs would be compatible with the district's recent investment (through a grant) in the district's 1:1 iPad initiative. The iZone RFP established “Minimum Qualifications” about compatibility with existing technology platforms, hardware and software specifications, and maintenance, and noted that any proposal would not be fully evaluated if these key specifications were not met first.

Step 2: Alignment to blended learning models, as well as to district curriculum, instruction, and learning goals. Decisions around alignment to district or school goals—including those related to blended learning specifically or curriculum and instruction more broadly—comprise the second step in the selection process. In this stage, decision-makers measured products against the criteria most important to the school or district's identified goals for blended learning. In Table 3, we provide a list of some of the most important factors in the selection process for the four sites. Data sources for this table included site visit data (e.g., interviews and focus groups) as well as documentation provided from districts (e.g., RFPs and evaluation rubrics).

Table 3. Important Factors in Vendor Selection for Step 2

NYC iZone	DCPS	LEBANON, PA	E.L. HAYNES
<ul style="list-style-type: none"> <li>• Alignment to New York State standards</li> <li>• Clear course goals and objectives</li> <li>• Incorporates student assessments into course design</li> <li>• Feedback mechanisms for instructors, parents, others</li> <li>• Provides professional development and support</li> <li>• Developmentally and “real-world” appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Alignment to Common Core</li> <li>• Adaptive to differing student levels/abilities</li> <li>• Provides additional lessons once students completed lessons/standards</li> <li>• Accessible sign-on for Kindergarten students</li> <li>• Data tracking mechanisms for teachers and administrators</li> </ul>	<ul style="list-style-type: none"> <li>• Alignment to station rotation blended learning model</li> <li>• Appropriate for high school students</li> <li>• Provides instantaneous data tracking at student level</li> <li>• Engaging for students</li> </ul>	<ul style="list-style-type: none"> <li>• Alignment to Common Core</li> <li>• Sufficient content to meet student needs</li> <li>• Data and reporting functionality to effectively inform instruction</li> <li>• Embedded formative assessments</li> <li>• Instant feedback to students based on responses</li> </ul>

As shown in Table 3, alignment to standards and blended learning models was a key factor in three of the four sites. Program content considerations were also common across the sites, with a particular emphasis on data tracking and management for teachers, and ensuring that content was developmentally appropriate for students. However, the sites differed somewhat in their other factors of interest, likely based on the formality of the procurement process itself.

**Step 3: Pricing and Licensing.** The final step in the selection process was determining pricing and licensing for potential products and programs. Although respondents across the sites reported that they would eliminate vendors selling products that posted astronomically high prices, they usually viewed pricing as negotiable. In Lebanon administrators often took advantage of free trials of new products and did not consider pricing until a purchasing decision was necessary. In E.L. Haynes, trials were utilized but only after a comprehensive cost-benefit analysis that took into account the long term pricing implications for the products under consideration. In DCPS and the iZone, the large size of the districts allowed administrators to negotiate lower prices, offering vendors broader access in return for lower per-pupil licensing costs.

**Finding 3: Districts and Schools Encouraged Teachers to Pilot *MINOR INVESTMENTS*.** At three of the four sites, teachers were encouraged to find and implement their own programs and products in their classroom. This strategy was especially promoted in the iZone, where teachers frequently sought out new materials, such as freely-available online resources, or created their own online content. This teacher sourced strategy for minor investments stands in contrast to the more formal RFP process that the iZone pursued for major investments. One teacher in the iZone explained how she created content for her math classes:

*I make my own videos...I have a semi-flipped model, and I use it mostly for curriculum acceleration. [The students] watch the videos outside of class, and then they come in, and we either keep on trucking along, or we do some kind of cool, hands-on, 'group-y' activity based on what they did the night before.*

A principal at another iZone school said that, while his school used some of the iZone's vetted vendors for specialized courses, such as a la carte Advanced Placement courses, most in-classroom content was teacher created or teacher found.

Teachers at E.L. Haynes and Lebanon High School were similarly encouraged to find outside resources or create their own that would fit with their students and classroom needs. The one exception was DCPS, where the process was more tightly controlled. Although teachers still had some license to explore freely available resources in their classrooms, the vast majority of teachers used the two programs for station rotation—one for math, and one for literacy—that had been recommended by the district.

## Lessons Learned: School-Level Structures

In Brief 1, we discussed the importance of examining school-level blended learning implementation, as school leaders must decide how their building will align the blended learning strategy (or strategies) to the day-to-day realities of the school. In our review of "Conditions for Successful Implementation," we highlighted a series of important questions to consider at the school level to support blended learning initiatives (see Table 4).

Table 4. Blended Learning School Checklist

SCHOOL CHECKLIST	Y	N
Has the school settled on a blended learning model?		
Does the school have the appropriate infrastructure to support blended learning initiatives?		
Does the school have a mechanism to support the data management aspect of blended learning?		
Is there a comprehensive plan for professional development and training?		
Does the school have on-site tech support?		

Below, we highlight lessons learned from the site visits at the three districts and one charter school.

**Finding 4: Sites Varied in Locus of Control When Searching for “Best Fit” Blended Learning Model(s).** Two sites utilized a formal, top-down strategy to determine blended learning models for their schools, whereas the other two sites took a bottom-up approach wherein school staff had more autonomy in choosing and defining the type of model(s) they used in their classrooms. Below, we provide examples to demonstrate the type of top-down and bottom-up strategies employed by sites.

Top-Down Approach Example: Lebanon, PA. As discussed earlier, Lebanon hired an external consulting group to oversee the blended learning implementation process from start to finish. The consultant met with key staff to discuss the school’s specific blended learning goals and then conducted a gap analysis that assessed the school in ten key areas related to “blended learning readiness,” such as, infrastructure, operations, and school environment. The consultant explained,

*We want that gap analysis to be a reality check for them. And we use that process to set expectations, and we try to use it to decide: are we going to do a whole school? Are we going to do a small pilot? Are we going to do everybody all at once? How are we going to manage it? We want them to be successful, and we see a lot of people that jump in without knowing what it’s really like.*

Based on the gap analysis, the consultant worked with key school staff to develop the blended learning design or “blueprint” for the school that outlined the model, content, devices, professional development plan, and communications rollout. In addition, school leaders worked with the consultant to develop a pilot of the station rotation blended learning model in select classrooms, choosing a cohort of eight 9<sup>th</sup> grade teachers in core subject areas. Their classrooms were co-located together as part of the pilot to give them opportunities to work together and share ideas easily.

Bottom-Up Approach: E.L. Haynes Public Charter School: E.L. Haynes utilized a bottom-up approach that was driven by teacher interest and included a great deal of flexibility and autonomy for teachers to try out different models and associated tools. In the first year of implementation, the high school experimented with different blended learning tools to see what would work with their student body but there was no systematic approach to rolling out the tools or receiving feedback. The high school made some decisions ahead of the second year about the utility of the tools, including software, hardware, and the models themselves. By year three, grant funding allowed more math teachers in the high school to experiment with competency-based, online tools for algebra and physics courses. Two teachers in the school became hubs of knowledge on blended learning implementation through their participation in an externally-funded education innovation fellowship (see call-out box on page 12). As the school’s blended learning strategy matured, district leadership worked to streamline the vetting selection and

purchasing of programs to align with the school's student needs, the current blended learning models, and capacity.

**Finding 5: Strong School Leadership was Key to Establishing Clear Expectations and Goals for Blended Learning.** Particularly in the first year of implementation, school leaders across the four sites noted the importance of clearly communicating the underlying goals of the blended learning strategy to teachers. This communication varied from site to site, but typically there was at least one individual with intimate knowledge of the school environment who coordinated efforts to make explicit connections between blended learning strategies and the school's goals and mission. Often, this communication would involve direct professional development around the blended learning models, but it also took the form of informal meetings with teachers to assess pre-existing levels of buy-in to blended learning approaches and models and determine supports and resources necessary to improve teacher buy-in and technology-enriched instructional practices. For example, one iZone principal would do frequent walk-throughs of teachers' classrooms and speak with them afterwards informally about their progress toward incorporating blended learning techniques as well as any struggles or general challenges they might be facing.

School leaders noted, however, that their efforts were sometimes met with resistance from school staff, particularly in the first year of implementation. Administrators at three of the four sites indicated that initial inconsistent buy-in across teachers made it difficult to ensure fidelity of implementation for students. As one principal explained, the whole school needed to eventually get on board for blended learning to be a successful strategy:

*I think for any school to undertake blended learning, it has to seem as not a 'nice to have;' it has to be the strategy of the school to achieve equity or else you have a disconnected and disjointed student experience [...].*

While some teachers in focus groups professed high levels of buy-in and believed their students were learning more and were gaining valuable skills as learners, others were fairly resistant to the change. Those teachers who were reluctant said that adjusting to new models of classroom management, ensuring time on task for students, differentiating their instruction using online approaches, and accounting for additional preparation time were all barriers to success with the blended learning approach—at least in the first year of implementation. School leaders noted that investments in professional development and maintaining open lines of communication with teachers were key tools to improve teacher buy-in over time, which they said led to gradual improvements in blended learning implementation at the school level in subsequent years.

**Finding 6: Sites Continuously Adapted Approaches to Meet Evolving Blended Learning Needs.** Although schools employed different strategies to determine their blended learning models, sites made course corrections related to infrastructure and implementation strategies at numerous points to keep pace with evolving needs and emerging knowledge about blended learning and the needs of the school, teachers, and students. One principal summarized the complex nature of matching models, devices, and platforms:

*I think the theme that [we] are hitting on is that the definition of blended learning is already evolving. And it's going to come down to: what's really going to give you the biggest impact on student learning? Is it creating a teaching and learning organization where the teachers become more professionalized, in terms of their ability to plan and create content? Or do you leverage commercially created products for certain courses? Which ones? And how do you then get the teachers professionalized around how they best use those commercial products?*

The questions raised by this principal highlight potential areas where course-corrections were necessary as school leaders moved their schools through the implementation process:



1) Reviewing Devices and Platforms. Although sites had varying device strategies—some chose one device for all students and some had a mix of devices throughout the site—they all had to deal with issues related to monitoring existing device needs and either changing and/or “patching” them as implementation moved forward. In several cases, schools invested in updates to their existing devices or reevaluated their purchasing plans as their blended learning strategies evolved. For example, DCPS invested in laptops on a small scale during their pilot phase, but found that desktop computers were a more practical investment in the long term, given the safety and security needs of their schools.



2) Accounting for Connectivity and Tech Support Needs. Across all sites, connectivity was a key infrastructure issue. In interviews, school staff and teachers discussed the importance of constantly evaluating the bandwidth needs of classrooms to avoid situations where connectivity could become spotty or completely fail. At one site, connectivity was very spotty for over a month and teachers were extremely frustrated. One principal described the frustration from his teachers saying,

*Our teachers are ready and willing to do anything. However, when I saw them lose their minds was in October when the Internet was down on a daily basis. They wanted to give up and redesign their courses. There was a commitment to get the building as connected as possible. The bandwidth here is the biggest in the city, but still some days it's slow.*

When connectivity was an issue, administrators and teachers both noted the importance of having a backup plan in place. One teacher noted:

*If the Internet goes down when we get here at 6:30 in the morning, the phone calls start. 'The internet's down.' So you have to have a backup plan. And you have to know where your students left off, so you can pick up old-school if you have to in the morning to get you through. You just have to be prepared.*

Backup plans might involve calls to the district office (as was the case in the school referenced above), or it might involve instructing teachers to have offline materials and activities ready for students in the case of an outage.



3) Investing in Learning Management Systems. A Learning Management Systems (LMS) is an online platform that functions as a hub of student data, courseware, and online content to support blended learning implementation. All four sites employed some form of LMS, ranging from open-sourced systems to fee-for-service systems with a single sign-on platform, where content and subsequent data were accessible through at least one system. Sites varied in their selection of LMS systems and were continually reevaluating these choices to ensure the best options for their teachers and students. In some cases, teachers employed individual systems that met the needs of their classrooms, leading to a varied approach to LMS usage across the school that evolved from year to year as teacher needs changed.

**Finding 7: Sites Employed Multiple Strategies for Blended Learning Professional Development.** All four sites implemented blended learning professional development but used a variety of strategies, including internal district or school opportunities, informal peer-to-peer strategies, and an externally-driven fellowship model (see Table 5). Most of the sites pursued multiple strategies, often simultaneously.

Table 5. Blended Learning Professional Development Strategies

STRATEGY	SITE
<p><b>School- or District-Led Professional Development:</b> Professional development was offered by the school or district and was tied to the given blended learning strategy. For example, in Lebanon, the cohort of teachers from the pilot year received five days of training that included learning about devices and programs as well as blended learning pedagogy. Additionally, there was a blended learning instructional coach who would come to the school once a month to work with teachers.</p> <p>The iZone allowed school leaders and teachers alike to access the iLearnNYC set of professional development opportunities. In DCPS, district leaders instituted a summer training session on blended learning for school leaders and teachers and at E.L. Haynes, in-school trainings and one-on-one meetings between administrators and teachers implementing blended learning models occurred regularly</p>	<p><b>iZone, Lebanon, DCPS, E.L. Haynes</b></p>
<p><b>Peer-to-Peer Professional Development:</b> In the iZone, DCPS, and at E.L. Haynes, teachers informally collaborated on an as needed basis about blended learning implementation in their respective classrooms. Teachers spoke very positively about the value of learning from their peers, especially since blended learning was a new and continually evolving innovation. One iZone teacher explained that this type of informal collaboration worked well at the school because of the type of teachers that were there.</p> <p><i>I think the reason why that [peer-to-peer collaboration] works here is because we do have people that seek out new ways to do it and new approaches. [...] That's how I've learned the most, even the stuff that I have tweaked and changed a lot for my class, the root is in what someone else was doing, even in a different discipline.</i></p>	<p><b>iZone, DCPS, E.L. Haynes</b></p>
<p><b>External Blended Learning Fellowship Program:</b> Both DCPS and E.L. Haynes teachers benefited from access to an externally-funded fellowship program in the Washington, DC area, which selected a cohort of highly motivated teachers to participate in an intense training series on blended learning strategies over the summer and throughout the year. When teachers re-entered their buildings, they were actively encouraged to promote a culture of peer-to-peer professional development where teachers informally met and discussed their approach to implementation. School leaders in DCPS and E.L. Haynes noted that teachers who had participated in the fellowship program were major drivers of blended learning professional development in their schools.</p>	<p><b>DCPS, E.L. Haynes</b></p>

### Lessons Learned: System Level Supports

As we noted in our Phase I Research Brief, system-level support for both traditional public schools and charter schools is an important component of any blended learning implementation plan. District and charter administrators can provide support in four areas: goal alignment, large-scale support, data-sharing agreements, and continuous evaluation and refinement. These four components are included in the checklist for blended learning integration in Table 6.

Table 6. Blended Learning System-Level Checklist

SYSTEM-LEVEL CHECKLIST	Y	N
Are the goals of the blended learning initiative aligned to district and/or charter system goals?		
Is there sufficient capital (human and fiscal) to support blended learning?		
Do data sharing agreements need to be revised?		
Is there a plan to leverage outside partnerships to support blended learning environments?		
Is there a plan for continuous evaluation and refinement?		

With these components in mind, this section highlights the best practices and lessons learned at the system level from our four site visits.<sup>12</sup>

**Finding 8. All Sites Used a Scale-Up Model to Gradually Ensure Alignment to System-Wide Goals.** Across all four sites, district and charter leaders treated the implementation of blended learning strategies as an experiment of sorts that could help certain pockets of students and schools meet district goals. The sites all piloted blended learning strategies and then scaled them to encompass larger numbers of students, grade levels, and/or schools. In Table 7, we detail the scale-up strategy at each of the four sites.

Table 7. System-Level Goals and Scale-Up Strategies

SITE	SYSTEM-LEVEL GOALS	SCALE-UP STRATEGY
iZone	Allow for school-level customization of blended learning models	iLearnNYC support system began with 41 schools in 2010, and gradually increased to over 300 by 2015
DCPS	Prioritize small-group instruction through implementation of a station rotation model	Began with individual schools, then moved to a feeder pattern strategy. Now at 17 schools district-wide
Lebanon, PA	Become a 1:1 school that promotes 21st Century learning skills	Piloted with eight classrooms in the first year of implementation; expanded to whole high school in the second year
E.L. Haynes	Use technology to support competency-based learning in high school; use lab-rotation for math and reading intervention for middle school; use station rotation as intervention and support for elementary grades	Individual teacher experimentation at first (2011), gradual system-wide support across grade levels by 2013

Some interview respondents attributed this gradual approach to the significant capital investments in technology required for implementation, noting that large-scale implementation would not have been financially feasible. Although all four sites did gradually increase the reach of the blended learning

<sup>12</sup> We note here that system-level concerns may not apply to all charter schools, as some charters are managed in-house at the school level. The charter school included in our research, however, houses three sub-schools of differing grade levels (preK-4; 5-8; and 9-12) on two campuses and had administrative staff that spanned across the three schools. We therefore analyzed blended learning decisions made at the cross-school level as system-level concerns.

approach, none of the sites had spread blended learning to all students in all subjects across all schools at the time of our interviews.<sup>13</sup>

**Finding 9. All Sites Pursued Multiple External Sources of Funding to Support Aspects of Their Work.** Administrators across the four sites listed several grants they had received to support the initial capital investment in technology tools, as well as the ongoing support to scale up existing strategies and pilot new strategies. A common theme across three of the four sites was the use of School Improvement Grants (SIG) to support initial investments, as well as matching funds and other investments from the Bill & Melinda Gates Foundation. The site with the most diversified set of grants was DCPS, where system administrators identified federal sources of funding (including Race to the Top and SIG grants), large scale foundation grants (including the Gates Foundation and Google), and local philanthropic investments (including the CityBridge Foundation and the DC Public Education Fund). In all cases, but especially in DCPS, this led to a varied funding approach to blended learning support, and administrators had to be mindful of the fact that individual grants had their own timelines, requirements, and restrictions.

Administrators also noted that as general interest in blended learning grew throughout the district, more schools wanted access to blended learning tools and strategies. This increased interest could stretch funding even further. Said an administrator at DCPS:

*If I were to get more money tomorrow, I would not put a dime of it [into a school with blended learning already in place]. I would put that into a new school, because I've got a long waiting list of schools that want to be modernized and transformed into this kind of model.*

To account for the multiple grant sources—and the growing interest in blended learning strategies system-wide—administrators across the four sites noted the importance of planning for sustainability. For example, Lebanon opted to purchase their foundational technology (iPads) and build the cost directly into their budget for the capital investment year when a large amount of grant funds were available. And a school in the iZone suggested that districts pursue grants with a longer window—she suggested a five-year window as a minimum—to ensure that investments would be sustainable. In the case of the iZone, staff were designated to certain regions to help with blended learning implementation and sustainability.

**Finding 10. Blended Learning Approaches Were Not Employed to Cut Staffing Positions.** Blended learning adoption can be seen as a means to increase class size, and could ultimately lead to staffing reductions for teachers-of-record (for example, by hiring more paraprofessionals). Yet administrators at all four sites stressed that their system's decision to adopt a blended learning approach was completely divorced from decisions about staffing or budgetary allocations. Blended learning, they said, was an instructional decision, not a budgetary one. Explained the principal at the high school in Lebanon, "We want to use these strategies because they're good for kids, because they need to work in teams, they need to work by themselves, and they need to work with a teacher."

**Finding 11. Teacher Recruitment and Teacher Attrition Were the Most Salient Human Capital Concerns.** All four sites reported that blended learning required a more focused recruitment strategy for incoming teachers. Across the four sites, but especially at the iZone and at E.L. Haynes, where district and school administrators had more control over teacher recruitment, administrators

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<sup>13</sup> Although all iZone schools, by definition, incorporate some aspect of blended learning, the iZone itself is a subset of New York City Public Schools. Additionally, iZone schools may not have blended learning strategies in place for all subjects and grade levels.

cited the importance of recruiting teachers who were ready and willing to teach using a blended approach to instruction. Explained one principal at an iZone school, “We’re looking for teachers who will use their time wisely, will take a risk, will collaborate, and are willing to learn with and for technology.”

Administrators at the three districts also mentioned that blended learning strategies did help to ensure that teachers were aligned to the school vision through selective attrition. For example, an iZone principal mentioned that she had seen some teachers leave “because they weren’t aligned to the mission.” And, on the flipside, a DCPS administrator said that blended learning had helped with the retention of good teachers across the schools in that district.

**Finding 12. Sites incorporated plans for continuous evaluation and improvement.** At each site there was consensus that blended learning would continue in the district as an instructional strategy, and each site dedicated resources to ensuring continual evaluation and improvement. In both DCPS and the iZone, district administrators led the effort to ensure that blended learning strategies were aligned to district goals. DCPS was working with an external evaluator to study its blended learning pilot schools. The iZone, in collaboration with the non-profit association iNACOL, released a case study report of blended learning in iLearnNYC schools.<sup>14</sup> And the technology innovation director at E.L. Haynes developed a comprehensive evaluation tool called the Rapid Innovation Evaluation Tool (RIET)<sup>15</sup> to help gauge the efficacy of blended learning programs by analyzing student outcomes and implementation fidelity, including technology readiness and classroom implementation indicators such as student self-directed learning, goal setting, and student performance coaching. Finally, Lebanon School District maintained a partnership with the Pennsylvania Hybrid Learning Institute,<sup>16</sup> which provided evaluation support focused on blended learning improvements.

## II. Internal Capacity and Interest in Blended Learning in Philadelphia’s Public Schools: Results of a System-Wide Survey

As shown in Brief 1 and the preceding “External Best Practices” section, schools and districts implementing blended learning models must address several needs at the school and system levels. In an effort to examine the School District of Philadelphia’s capacity to implement blended learning models in its schools, we surveyed technology staff within District and charter schools regarding four areas related to blended learning:

1. Capacity for and interest in blended learning;
2. Technology and infrastructure to support blended learning;
3. Presence of blended learning models currently in place; and
4. Professional development related to blended learning.

This section of the Brief provides additional details about the survey design and data. We then highlight major findings within each of the four areas described above.

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<sup>14</sup> The International Association for K12 Online Learning (iNACOL). (2013). *A roadmap for implementation of blended learning at the school level: A case study of the iLearnNYC lab schools*. Vienna, VA: Darrow, Friend, & Powell.

<sup>15</sup> The RIET is currently used as an internal document and is not publicly available.

<sup>16</sup> <http://www.pahli.org/>

## Data and Methods for the Survey

As part of our efforts to gauge the prospects for blended learning in Philadelphia, we conducted a survey of district and charter schools May 11 through June 5, 2015. The complete survey, including all questions and summary data of each element, is available in Appendix B. The survey was written by PERC staff, and questions were finalized through conversations with staff at the District. It was distributed by District staff to all technology coordinators at district and charter schools, and left open for four weeks. If the school did not have a designated technology coordinator, discretion was given to the principal to designate another individual within the school to complete the survey. We also included questions in the District teacher survey and will provide teacher survey results as an addendum to this report in fall 2015. Of the 304 district and charter schools in the city, 108 completed the survey in whole or in part, an overall response rate of 36%.

Some overall descriptive findings based on the response rates included:

- The response rate was heavily tilted towards district schools (48% response rate). Only three charters responded (4% response rate).
- Schools serving grades K-8 made up the single largest group of respondents, representing 43% of all respondents.
- In all, 70% of respondents represented schools with elementary grades, 52% represented middle grades, and 24% represented high school grades.

## Survey Findings

We provide survey results in four general categories: capacity and interest; technology and infrastructure; current blended learning models; and professional development and integration.

### *Capacity and Interest*

**Finding 13: Among the schools that responded,<sup>17</sup> the majority had a formal technology position, although staff filling technology positions frequently had multiple roles.** Of the 108 respondents, 79% (n=85) reported having a formal technology position, while 20% (n=22) reported an informal position.<sup>18</sup> In all, 57% of respondents, whether their position was formal or informal, held a second position. Even among those with a formal position, close to half (49%) held a second position, most commonly in teaching.

**Finding 14: Technology coordinators identified technology support as their most common responsibility.** Our survey asked respondents whether they performed a variety of technology-related tasks; respondents were then asked to rank these tasks according to how frequently they performed each task. Figure 2 reports the percentage of respondents that reported performing each task at least some of the time. Nearly all respondents (97%) reported that they provided tech support as part of their job, exceeding all other categories by more than 10 percentage points.

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<sup>17</sup> Given that this survey was sent to technology coordinators, it is possible that schools where the role of technology coordinator is less important might not have responded. In these schools the part time “technology coordinator” might have many different roles and might not have time nor have interest in responding to this survey.

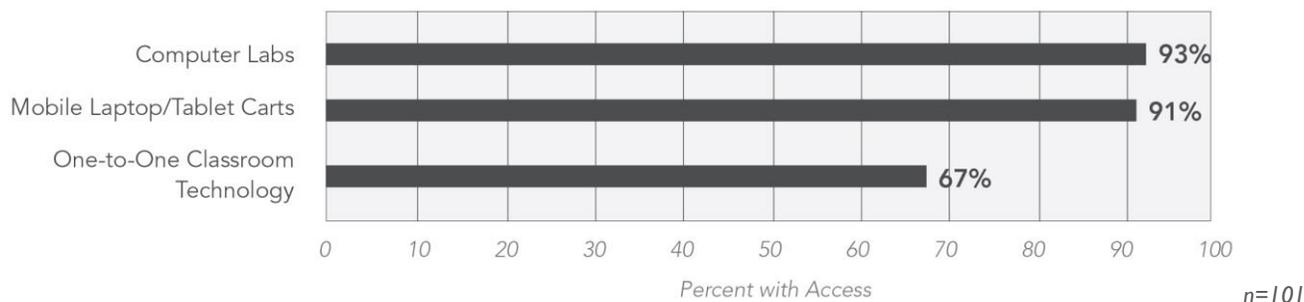
<sup>18</sup> One respondent (1%, n=1) reported that he/she did not hold a technology position.



## Technology and Infrastructure to Support Blended Learning

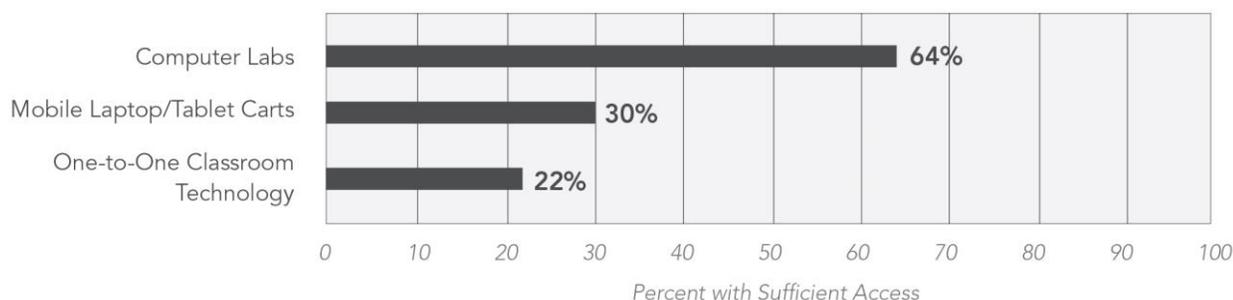
**Finding 16: Technology devices are primarily based in computer labs or mobile carts.** All survey respondents reported that students have access to some technology during the school day, and many reported that students have multiple ways to access personal computing devices. As shown in Figure 4, respondents reported that computer labs (93%, n=101) and mobile laptop or tablet carts (91%, n=101) are available in the vast majority of survey respondents' schools. Roughly two thirds (67%, n=101) reported that students in their school have access to one-to-one desktop, laptop, or tablet computers located in classrooms during the school day. The fact that respondents reported that nearly one third of students do not have access is an area of concern for technology coordinators (see below).

Figure 4. Student Access to Technology during School Hours



**Finding 17: Technology coordinators believe there is a need for more mobile carts and one-to-one computing devices.** As can be seen in Figure 5, while nearly two thirds (65%) of respondents reported a sufficient number of computer labs at their school, only 30% reported that they had a sufficient number of mobile laptop or tablet carts, and only 22% reported a sufficient amount of one-to-one in-classroom technology.

Figure 5. Technology Coordinators Views about the Adequacy of Access to School Technology

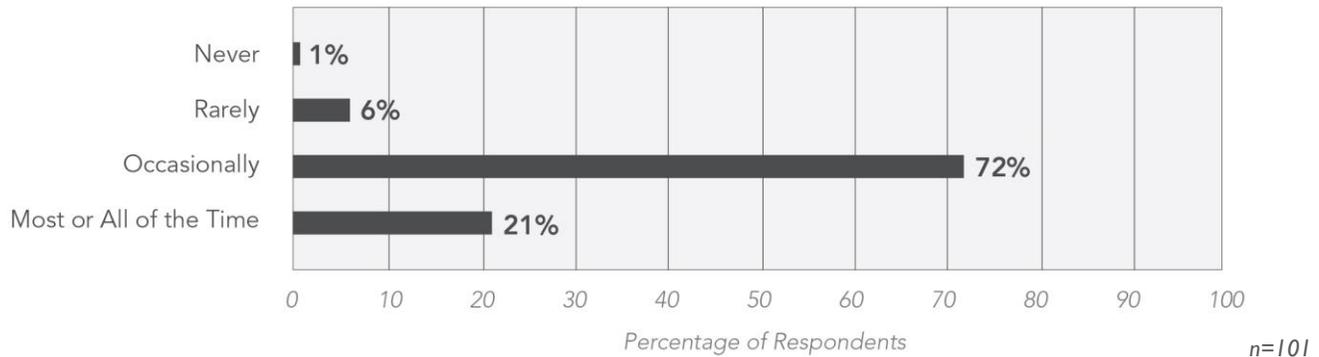


Note: Sample size varied by the number of respondents who indicated that their school possessed this technology format; n=96 for computer labs; n=94 for mobile carts; n=83 for one-to-one classroom technology

Moreover, respondents indicated that the extent to which students had individual access to technology varied by technology configuration. A strong majority (81%) of survey respondents who had computer labs (n=95) reported that all or nearly all students have individual access to computer labs while 40% reported that students have individual access to technology carts (40%, n=91) and 38% have access to in-classroom technology (38%, n=60). Taken together, these findings suggest that, while schools granted students access to technology, there may not be sufficient technology across schools for all students to access them simultaneously.

**Finding 18: Technology users experience slow connectivity speeds when using their schools' Internet connections.** Figure 6 displays the frequency with which respondents reported experiencing slow connectivity speeds when using their schools' Internet connections. The vast majority (93%) of survey respondents reported that they encountered slow connectivity speeds either occasionally or most of the time when accessing online content through their schools' Internet connection.

Figure 6. Frequency with which Users Experience Slow Internet Connectivity at School

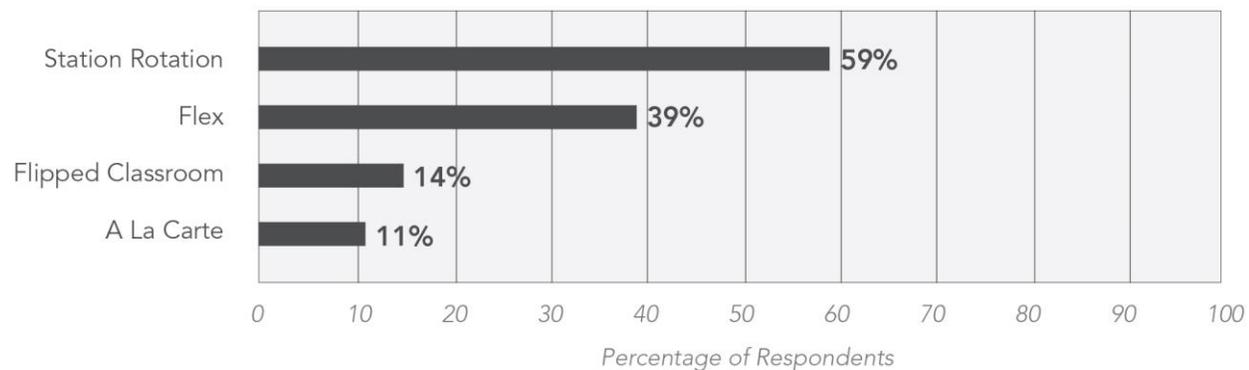


### *Blended Learning Models in Place*

**Finding 19: At nearly every school, at least some teachers integrate personal computing devices into classroom lessons.** The vast majority (99%) of survey respondents (n=75) reported that at least some teachers integrate students' use of personal computing devices into classroom lessons. On average, survey respondents reported that more than half of teachers in their school integrate student use of personal computing devices into classroom lessons. Roughly half (55%, n=97) of all respondents reported that teachers require student use of personal computing devices outside of class time.

**Finding 20: Many schools had blended learning models in place during the 2014-15 school year.** A majority (74%) of survey respondents (n=91) reported that their school used at least one blended learning model (Station Rotation, Flipped Classroom, Flex, or A La Carte). Figure 7 displays the blended learning models present in survey respondents' schools.

Figure 7. Blended Learning Models Present in Schools



Note: n=93 for Station Rotation, n=90 for Flex, Flipped Classroom, and A La Carte

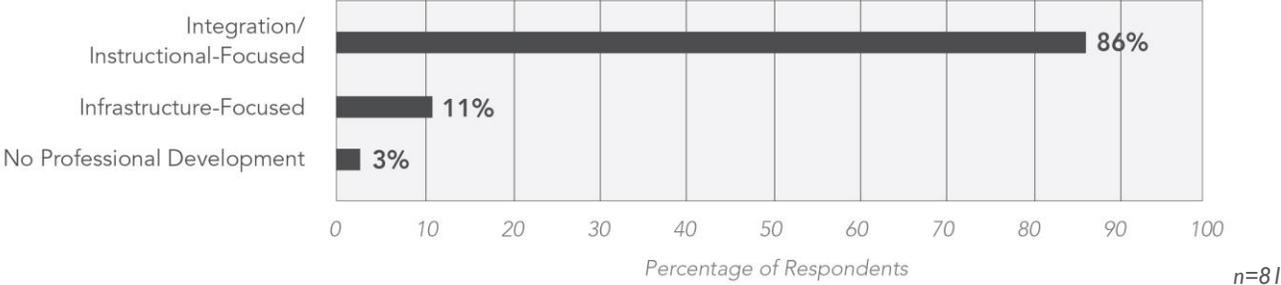
As shown in Figure 7, over half (59%) of survey respondents (n=93) indicated that their school uses a Station Rotation model and just over one third (39%, n=90) indicated school use of a Flex model—both of these models require consistent access to devices in the classroom. Less than 15% of respondents reported school use of either a Flipped Classroom (14%, n=90) or A La Carte (11%, n=90) model (further details about readiness to implement these models is provided in Appendix B).

*Professional Development and Integration of Blended Learning*

**Finding 21: Few schools offered blended learning professional development during the 2014-15 school year.** Few respondents (14%, n=91) reported that their school provided blended learning professional development opportunities for teachers during the 2014-15 school year.

**Finding 22: Survey respondents were interested in future blended learning professional development opportunities focused on instruction and integration.** Figure 8 below illustrates important blended learning professional development topics reported by respondents.

Figure 8. Most Important Topics for Future Blended Learning Professional Development



As illustrated above, a strong majority of respondents (86%) reported that the most important topic for future blended learning professional development was technology integration and instruction, for example, classroom management, assessment, and differentiation. A much smaller proportion indicated that professional development about technology infrastructure, including hardware and software, was a top priority.

**III. Recommendations**

Below, we provide recommendations for Philadelphia public schools to consider as they move toward implementing blended learning strategies. Please see Appendix A for a table that aligns Philadelphia needs with best practices and recommendations.

**Recommendation 1: Start Small.** Although they took different approaches, all four best practice sites piloted blended learning in some way before they slowly started to scale-up the effort. Although the survey data show that blended learning models are already taking root in certain Philadelphia schools, it will be important for Philadelphia to follow the best practice of piloting new blended learning models and support programs in a subset of schools and/or classrooms before scaling aspects of blended learning approaches to a broader set of students, grades, or schools.

**Recommendation 2: Invest in School Leadership.** Obtaining the buy-in of school leadership was key to the success of blended learning implementation across all four best practice sites. School leadership was highlighted in Finding 5 and was a theme across multiple findings from the best practice site visits,

including discussions of the search for appropriate programs and products (Finding 2), blended learning model “fit” to school and system goals (Findings 4 and 6), strategies around professional development (Finding 7), funding to support initiatives (Finding 9), and investments in continual evaluation and refinements (Finding 12). If leadership is not invested in the goals, process, planning, implementation, and long term strategy, it will be difficult for the strategy to be implemented with fidelity (and enthusiasm) by teachers and students. Investing in professional development for school leadership—for example, the technology coordinators who completed the survey—is key to the success of any new blended learning initiative. For Philadelphia, it will be important to find school leaders to guide this work to not only implement in their schools but disseminate their best practices to other schools throughout the Philadelphia school system.

**Recommendation 3: Develop a Plan for Blended Learning Professional Development.**

Even though sites conceptualized and deployed professional development in different ways, it is extremely important to map out a plan for professional development that is intentional and targeted to the needs of the teachers and school staff. In Philadelphia, technology coordinators indicated that there was a great need for blended learning professional development and sessions that specifically focus on technology integration and instruction (see Finding 22). Mapping out a professional development plan and disseminating the plan and action steps to schools should be high priority ahead of the 2015-16 school year. An innovative approach that Philadelphia may want to consider, as noted in Finding 7, is the fellowship model from Washington, DC—the Education Innovation Fellowship<sup>20</sup>—which is a public-private partnership invested in building teacher leaders who could guide blended learning professional development in their schools.

**Recommendation 4: Assess Device Needs on a Regular Basis.** The need for hardware to match blended learning model needs was well cited during site visits (see Findings 2 and 6). The survey results reveal that over half of technology coordinators reported utilizing the station rotation model in their schools (see Figure 7). Station rotation is a blended learning model that requires consistent access to devices in the classroom. As Philadelphia schools plan and implement blended learning strategies, it will be important to take inventory of existing hardware availability, as well as any changes that need to be made to best match the needs in individual schools.

**Recommendation 5: Invest in Connectivity and Have a Backup Plan.** All the best practice sites expressed the importance of connectivity, but also noted the importance of having a backup plan if connectivity was an issue from time to time (see Finding 6). Even the schools with a coherent approach to blended learning implementation may face issues related to the building itself (i.e., older buildings typically have thicker walls that can impede upload and download speeds). In Philadelphia, survey respondents reported that they encountered slow connectivity speeds when accessing online content through their school’s Internet connection (see Finding 18). It will be important for teachers and school administrators to recognize the importance of a contingency plan and continue to rely on their technology coordinators for tech support to help the school formalize these plans and strategies for continued improvement.

**Recommendation 6: Invest in Evaluation and Research.** Each of the four best practice sites had a plan to continually evaluate the success of blended learning in their schools and refine implementation (see Finding 12). It will similarly be important for Philadelphia schools to invest in evaluation and research to improve the early implementation and eventually measure student academic gains over time.

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<sup>20</sup> <http://www.citybridgefoundation.org/Collaboration/Fellowship>

## IV. Phase III Pilot Study Overview

Beginning in Fall 2015, Phase 3 of this research will focus on assessing implementation successes and challenges in Philadelphia schools from a variety of stakeholder perspectives (technology facilitators, teachers, principals, students) and utilize findings to inform the replicability of blended learning models across different school contexts and the development of meaningful and sustained professional development opportunities for teachers and school leaders. Ultimately, this implementation study, combined with a second round of survey findings in 2016, could inform the development of a longer-term analysis of the impact of blended learning practices on student achievement across a variety of school contexts utilizing different models.

Researchers will work closely with the PERC Governance Committee to identify district and charter schools appropriate for the implementation study. Criteria for selection will be agreed upon with the Committee and may include length of implementation experience, type of model, grade levels, school leadership, and student demographics. The mixed-methods study will include qualitative data collection starting in October 2015 and a blended learning survey for school technology facilitators in April-May 2016.

Qualitative data collection may include the following:

- Review of relevant documents and background materials from each school about its particular approach to blended learning;
- Interviews with principals, school technology leaders, and teachers;
- Focus groups with teachers and paraprofessionals who are involved in carrying out the blended learning model(s); and
- Observations/video recordings of classroom sessions where blended learning is taking place.

The qualitative research will inform refinements to the current blended learning technology coordinator survey and the questions added to the teacher survey. Survey findings will provide information about changes and developments in school capacity to implement blended learning across schools, as well as how these changes align with known promising practices. The technology coordinator survey will be designed for administration in both traditional public schools and charter schools, with a special emphasis on increasing the number of charter school respondents. PERC researchers will work closely with District and charter partners to ensure wide survey distribution across both school sectors.

## Appendix A: Alignment of Philadelphia Needs, Best Practices, and Recommendations

Table A1. Alignment of Philadelphia Needs, Best Practices, and Recommendations

	PHILADELPHIA'S BLENDED LEARNING NEEDS	BEST PRACTICE	RECOMMENDATIONS
<b>School-Level Structures</b>	<ul style="list-style-type: none"> <li>Technology coordinators believe there is a need for more mobile carts and one-to-one computing devices</li> </ul>	<ul style="list-style-type: none"> <li>Sites continuously adapt approaches to meet evolving infrastructure to support blended learning needs</li> </ul>	<ul style="list-style-type: none"> <li>Assess hardware needs on a regular basis</li> </ul>
	<ul style="list-style-type: none"> <li>Technology users experienced slow connectivity speeds when using their schools' Internet connections</li> </ul>	<ul style="list-style-type: none"> <li>Sites continuously adapt approaches to meet evolving infrastructure to support blended learning needs</li> </ul>	<ul style="list-style-type: none"> <li>Improve connectivity and have a backup plan</li> </ul>
	<ul style="list-style-type: none"> <li>Few schools offered blended learning professional development during the 2014-15 school year</li> </ul>	<ul style="list-style-type: none"> <li>Diverse strategies employed for blended learning professional development</li> </ul>	<ul style="list-style-type: none"> <li>Develop plan for blended learning professional development</li> </ul>
<b>Products and Programs</b>	<ul style="list-style-type: none"> <li>No data available at this time</li> </ul>	<ul style="list-style-type: none"> <li>Districts and schools encouraged teachers to pilot minor investments</li> </ul>	<ul style="list-style-type: none"> <li>Start small</li> </ul>
<b>System Level Supports</b>	<ul style="list-style-type: none"> <li>No data available at this time</li> </ul>	<ul style="list-style-type: none"> <li>Goal alignment: all sites used a scale-up model to ensure alignment to system-wide goals</li> </ul>	<ul style="list-style-type: none"> <li>Invest in school leadership</li> </ul>
	<ul style="list-style-type: none"> <li>No data available at this time</li> </ul>	<ul style="list-style-type: none"> <li>Sites incorporated plans for continuous evaluation and improvement</li> </ul>	<ul style="list-style-type: none"> <li>Invest in evaluation and research</li> </ul>

## Appendix B: Technology Coordinator Survey Responses to Implementation Questions

The following table provides further details of the results from questions 21-28 in the technology coordinator survey. In these questions, technology coordinators were asked to report on the school's ability to implement particular blended learning models as related to hardware, internet speed, and teacher adaptation.

Table B1. Technology Coordinator Survey Responses for Implementation Question 21-28

	 ROTATION	 FLIPPED	 FLEX	 A LA CARTE
Our school has little or none of the hardware needed to implement this model (%)	17	27.7	16	30.4
Our school has some of the hardware needed to implement this model (%)	50	53	54.3	49.4
Our school has most or all of the hardware needed to implement this model (%)	33	19.3	29.6	20.3
Total (%)	100	100	100	100
Sample Size	88	83	81	79
Internet speed would not be an issue in implementing this model (%)	20.2	25.6	22.2	25.3
Internet speed would be a minor or intermittent issue in implementing this model (%)	53.9	46.3	48.1	38
Internet speed would pose a major problem in implementing this model (%)	22.5	23.2	27.2	29.1
Internet speed would pose an insurmountable problem in implementing this model (%)	3.4	4.9	2.5	7.6
Total (%)	100	100	100	100
Sample Size	89	82	81	79
Teachers unable to adapt (%)	2.2	9.6	5	13.9
Teachers need significant PD to adapt (%)	37.1	50.6	46.3	51.9
Teachers need some PD to adapt (%)	38.2	28.9	28.7	25.3
Teachers have enough training to adapt (%)	22.5	10.8	20	8.9
Total (%)	100	100	100	100
Sample Size	89	83	80	79

## Appendix B2: Technology Coordinator Survey Responses

### Background Questions from Survey

#### Question 1. Governance Structure

<b>Governance</b>	<b>Frequency</b>	<b>Percent</b>
Charter	3	2.8
District	105	97.2
<b>Total</b>	<b>108</b>	<b>100.0</b>

#### Question 2. Grade Level Served

<b>Grade Level</b>	<b>Frequency</b>	<b>Percent</b>
Elementary	28	25.9
Middle	8	7.4
High	22	20.4
Elementary/Middle	46	42.6
Elementary/Middle/High	2	1.8
<b>Total</b>	<b>108</b>	<b>100.00</b>

#### Question 3. School Admission Type

<b>Admission Type</b>	<b>Frequency</b>	<b>Percent</b>
Alternative	1	0.9
Charter-Lottery	3	2.8
Citywide	6	5.6
Neighborhood	88	81.5
Open Admission	2	1.8
Special Admission	7	6.5
Special Center	1	0.9
<b>Total</b>	<b>108</b>	<b>100.0</b>

#### Question 4. Learning Network

<b>Grade Level</b>	<b>Frequency</b>	<b>Percent</b>
Network 1	13	12.4
Network 2	13	12.4
Network 3	10	9.5
Network 4	7	6.7
Network 5	17	16.2
Network 6	16	15.2
Network 7	16	15.2
Network 8	13	12.4
<b>Total</b>	<b>105</b>	<b>100.0</b>

## Technology Coordinator Questions

Question 1. What is the full name of the school for which you are completing this survey?

*[Open-ended]*

Question 2. Do you facilitate technology integration for more than one school?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	3	2.8
No	105	97.2
<b>Total</b>	<b>108</b>	<b>100.0</b>

Question 3. If you facilitate technology integration at more than one school, for how many schools do you serve as the technology coordinator?

<b>Number of Schools</b>	<b>Frequency</b>	<b>Percent</b>
1	2	66.7
2	1	33.3
<b>Total</b>	<b>3</b>	<b>100.0</b>

Question 4. List the other schools where you are the technology coordinator.

*[Open-ended]*

Question 5. Which of the following best describes your capacity as it relates to the use of technology at your school?

<b>Position Type</b>	<b>Frequency</b>	<b>Percent</b>
Formal Tech Position	85	78.7
Informal Tech Position	22	20.4
None	1	0.9
<b>Total</b>	<b>108</b>	<b>100.0</b>

Question 6. Do you hold a formal position at your school other than a technology-related position?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	60	56.6
No	46	43.4
<b>Total</b>	<b>106</b>	<b>100.0</b>

Question 7. What technology-related functions do you commonly perform in your role?

	<b>Technology Support</b>	<b>Lesson Planning</b>	<b>Administrative Tasks</b>	<b>Data Analysis</b>	<b>Professional Development</b>	<b>Resource Identification</b>
Rank	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
0 (Not Applicable)	3 (3.1)	19 (19.4)	26 (26.5)	24 (24.5)	14 (14.3)	18 (18.4)
1 (most common)	80 (81.6)	4 (4.1)	1 (1.0)	3 (3.1)	1 (1.0)	4 (4.1)
2	10 (10.2)	18 (18.4)	22 (22.5)	12 (12.2)	14 (14.3)	14 (14.3)
3	2 (2.0)	16 (16.3)	17 (17.4)	14 (14.3)	22 (22.5)	20 (20.4)
4	0 (0.0)	17 (17.4)	19 (19.4)	12 (12.2)	24 (24.5)	10 (10.2)
5	2 (2.0)	17 (17.4)	9 (9.2)	16 (16.3)	15 (15.3)	13 (13.3)
6 (least common)	1 (1.0)	7 (7.1)	4 (4.1)	17 (17.4)	8 (8.2)	19 (19.4)
<b>Total</b>	<b>98 (100.0)</b>	<b>98 (100.0)</b>	<b>98 (100.0)</b>	<b>98 (100.0)</b>	<b>98 (100.0)</b>	<b>98 (100.0)</b>

Question 8. What percentage of your time each week is devoted to technology coordination and support?

<b>Time</b>	<b>Frequency</b>	<b>Percent</b>
Very little of my time (0-10%)	24	23.76
Less than half of my time (10-40%)	35	34.65
About half of my time (40-60%)	25	24.75
Most of my time (60-90%)	10	9.90
All or nearly all of my time (90-100%)	7	6.93
<b>Total</b>	<b>101</b>	<b>100.00</b>

Question 9. What, if any, formal training do you have in technology-related fields?

<b>Training</b>	<b>Frequency</b>	<b>Percent</b>
Undergraduate	8	11.0
Graduate	29	39.7
Certificate	40	54.8
Other	20	27.4
<b>Total</b>	<b>73</b>	<b>100.0</b>

Question 10. When accessing online content through your school's Internet connection, how often do you encounter slow connectivity speeds?

<b>Frequency</b>	<b>Frequency</b>	<b>Percent</b>
Never	1	0.99
Rarely	6	5.94
Occasionally	73	72.28
Most or all of the time	21	20.79
<b>Total</b>	<b>101</b>	<b>100.00</b>

Question 11. Do any teachers at your school integrate student use of personal computing devices into their lessons?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	78	77.23
No	18	17.82
Not sure	5	4.95
<b>Total</b>	<b>101</b>	<b>100.00</b>

Question 12. To the best of your knowledge, what percentage of teachers integrate student use of personal computing devices into classroom lessons?

<b>Estimated Percent</b>	<b>Frequency</b>	<b>Percent</b>
0	1	1.33
10	6	8.00
20	8	10.67
30	8	10.67
40	5	6.67
50	9	12.00
60	6	8.00
70	5	6.67
80	11	14.67
90	8	10.67
100	8	10.67
<b>Total</b>	<b>75</b>	<b>100.00</b>

Question 13. For which grades do at least some teachers integrate student use of personal computers?

<b>Grade Band</b>	<b>Frequency</b>	<b>Percent</b>
K-2	34	45.3
3-5	49	65.3
6-8	42	56.0
9-12	21	28.0
<b>Total</b>	<b>75</b>	<b>100.0</b>

Question 14. Which of the following are available to students during school hours?

<b>Technology</b>	<b>Frequency</b>	<b>Percent</b>
Computer Lab	94	93.07
Mobile Technology Cart	92	91.09
1:1 Classroom Technology	68	67.33
Other	7	6.93
<b>Total</b>	<b>101</b>	<b>100.0</b>

Question 15a. How many devices are available at your school?

*[Open-ended]*

Question 15b. To the best of your knowledge, how frequently is at least one of the following in use during the school day?

Technology	Rarely or never (0-10%)	Less than half of the time (10-40%)	About half of the time (40-60%)	Most of the time (60-90%)	All or nearly all of the time (90-100%)	N/A	Total
Lab	4	3	4	9	76	1	97
%	(4.1)	(3.1)	(4.1)	(9.3)	(78.4)	(1.0)	(100)
Cart	3	10	11	20	45	5	94
%	(3.2)	(10.6)	(11.7)	(21.3)	(47.9)	(5.3)	(100)
Class	3	11	12	8	28	29	91
%	(3.3)	(12.1)	(13.2)	(8.8)	(30.8)	(31.9)	(100)
Other	0	2	2	1	4	36	45
%	(0.0)	(4.4)	(4.4)	(2.2)	(8.9)	(80.0)	(100)

Question 15c. To the best of your knowledge, how frequently are all of the following in use during the school day?

Technology	Rarely or never (0-10%)	Less than half of the time (10-40%)	About half of the time (40-60%)	Most of the time (60-90%)	All or nearly all of the time (90-100%)	N/A	Total
Lab	5	5	6	13	66	2	97
%	(5.2)	(5.2)	(6.2)	(13.4)	(68.0)	(2.1)	(100)
Cart	5	10	14	39	24	5	97
%	(5.2)	(10.3)	(14.4)	(40.2)	(24.7)	(5.2)	(100)
Class	4	15	12	15	18	29	93
%	(4.3)	(16.1)	(12.9)	(16.1)	(19.4)	(31.2)	(100)
Other	1	1	3	2	1	41	49
%	(2.0)	(2.0)	(6.1)	(4.1)	(2.0)	(83.7)	(100)

Question 15d. Roughly what percentage of students have access to a device during a technology session?

[Open-ended]

Question 15e. Does your school possess a sufficient number of each of the following to meet the needs of teachers and students?

Response	Lab	Cart	Class
Yes	62	28	18
%	(63.9)	(28.9)	(19.1)
No	34	66	65
%	(35.1)	(68.0)	(69.1)
N/A	1	3	11
%	(1.0)	(3.1)	(11.7)
<b>Total</b>	<b>97</b>	<b>97</b>	<b>94</b>
<b>%</b>	<b>(100)</b>	<b>(100)</b>	<b>(100)</b>

Question 15f. When utilizing the following, what percentage of students have individual access to a device?

<b>Technology</b>	<b>Few to no students (0-10%)</b>	<b>Less than half of students (10-40%)</b>	<b>About half of students (40-60%)</b>	<b>Most students (60-90%)</b>	<b>All or nearly all students (90-100%)</b>	<b>N/A</b>	<b>Total</b>
Lab %	4 (4.2)	5 (5.2)	0 (0.0)	9 (9.4)	77 (80.2)	1 (1.0)	96 (100)
Cart %	4 (4.2)	5 (5.2)	25 (26.0)	21 (21.9)	36 (37.5)	5 (5.2)	96 (100)
Class %	9 (9.4)	16 (16.7)	5 (5.2)	7 (7.3)	23 (24.0)	36 (37.5)	96 (100)
Other %	2 (2.1)	2 (2.1)	0 (0.0)	1 (1.0)	2 (2.1)	89 (92.7)	96 (100)

Question 16. To the best of your knowledge, do any teachers at your school require student use of personal computing devices outside of class time?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	53	54.6
No	44	45.4
<b>Total</b>	<b>97</b>	<b>100</b>

Question 17. To the best of your knowledge, please rank the devices below according to how common it is for students to use such devices to complete classwork outside of classroom time.

<b>Device</b>	<b>Rank</b>					<b>Average Rank</b>	<b>Total</b>
	<b>0 (not applicable)</b>	<b>1 (most common)</b>	<b>2</b>	<b>3</b>	<b>4 (least common)</b>		
School Device %	15 (28.3)	14 (26.4)	8 (15.1)	8 (15.1)	8 (15.1)	2.3	53 (100)
Community Device %	10 (19.2)	4 (7.7)	10 (19.2)	19 (36.5)	9 (17.3)	2.8	52 (100)
Family Device %	2 (3.8)	24 (45.3)	15 (28.3)	11 (20.8)	1 (1.9)	1.8	53 (100)
Smartphone %	8 (15.1)	10 (18.9)	18 (34.0)	10 (18.9)	7 (13.2)	2.3	53 (100)

Question 18. Does your school allow students to use online or computer-based courses for credit recovery?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
No	80	82.5
Yes, students can make up credits by taking either online or offline computer-based courses	5	5.2
Yes, students can make up credits by taking offline computer-based courses	1	1
Yes, students can make up credits by taking online courses	11	11.3
<b>Total</b>	<b>97</b>	<b>100</b>

Question 19. How often do eligible students participate in credit recovery through online or offline computer-based courses?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Never	2	11.1
Rarely	3	16.7
Occasionally	9	50
Most or all of the time	4	22.2
<b>Total</b>	<b>18</b>	<b>100</b>

Question 20. When do students take these online or offline computer-based credit recovery courses?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Before school	3	18.8
After school	11	68.8
During free periods	5	31.3
Integrated into schedule	4	25.0
At home	8	850.0
<b>Total</b>	<b>16</b>	<b>100.0</b>

Question 21. Do any teachers at your school currently use an instructional model that fits the "Rotation model" description?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	55	59.1
No	20	21.5
Not Sure	18	19.4
<b>Total</b>	<b>93</b>	<b>100</b>

Question 22a. Please provide a rough estimate of your school's capacity to implement a Rotation model along the following dimension: Hardware Availability

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Our school has little or none of the hardware needed to implement this model	15	17
Our school has some of the hardware needed to implement this model	44	50
Our school has most or all of the hardware needed to implement this model	29	33
<b>Total</b>	<b>88</b>	<b>100</b>

Question 22b. Please provide a rough estimate of your school's capacity to implement a Rotation model along the following dimension: Internet Connectivity

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Internet speed would not be an issue in implementing this model	18	20.2
Internet speed would be a minor or intermittent issue in implementing this model	48	53.9
Internet speed would pose a major problem in implementing this model	20	22.5
Internet speed would pose an insurmountable problem in implementing this model	3	3.4
<b>Total</b>	<b>89</b>	<b>100</b>

Question 22c. Please provide a rough estimate of your school's capacity to implement a Rotation model along the following dimension: Teacher Training

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Teachers unable to adapt	2	2.2
Teachers need significant PD to adapt	33	37.1
Teachers need some PD to adapt	34	38.2
Teachers have enough training to adapt	20	22.5
<b>Total</b>	<b>89</b>	<b>100</b>

Question 23. Do any teachers at your school currently use an instructional model that fits the "Flipped model" description?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	13	14.4
No	55	61.1
Not Sure	22	24.4
<b>Total</b>	<b>90</b>	<b>100</b>

Question 24a. Please provide a rough estimate of your school's capacity to implement a Flipped model along the following dimension: Hardware Availability

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Our school has little or none of the hardware needed to implement this model	23	27.7
Our school has some of the hardware needed to implement this model	44	53
Our school has most or all of the hardware needed to implement this model	16	19.3
<b>Total</b>	<b>83</b>	<b>100</b>

Question 24b. Please provide a rough estimate of your school's capacity to implement a Flipped model along the following dimension: Internet Connectivity

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Internet speed would not be an issue in implementing this model	21	25.6
Internet speed would be a minor or intermittent issue in implementing this model	38	46.3
Internet speed would pose a major problem in implementing this model	19	23.2
Internet speed would pose an insurmountable problem in implementing this model	4	4.9
<b>Total</b>	<b>82</b>	<b>100</b>

Question 24c. Please provide a rough estimate of your school's capacity to implement a Flipped model along the following dimension: Teacher Training

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Teachers unable to adapt	8	9.6
Teachers need significant PD to adapt	42	50.6
Teachers need some PD to adapt	24	28.9
Teachers have enough training to adapt	9	10.8
<b>Total</b>	<b>83</b>	<b>100</b>

Question 25. Do any teachers at your school currently use an instructional model that fits the "Flex model" description?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	35	38.9
No	32	35.6
Not Sure	23	25.6
<b>Total</b>	<b>90</b>	<b>100</b>

Question 26a. Please provide a rough estimate of your school's capacity to implement a Flex model along the following dimension: Hardware Availability

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Our school has little or none of the hardware needed to implement this model	13	16
Our school has some of the hardware needed to implement this model	44	54.3
Our school has most or all of the hardware needed to implement this model	24	29.6
<b>Total</b>	<b>81</b>	<b>100</b>

Question 26b. Please provide a rough estimate of your school's capacity to implement a Flex model along the following dimension: Internet Connectivity

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Internet speed would not be an issue in implementing this model	18	22.2
Internet speed would be a minor or intermittent issue in implementing this model	39	48.1
Internet speed would pose a major problem in implementing this model	22	27.2
Internet speed would pose an insurmountable problem in implementing this model	2	2.5
<b>Total</b>	<b>81</b>	<b>100</b>

Question 26c. Please provide a rough estimate of your school's capacity to implement a Flex model along the following dimension: Teacher Training

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Teachers unable to adapt	4	5
Teachers need significant PD to adapt	37	46.3
Teachers need some PD to adapt	23	28.7
Teachers have enough training to adapt	16	20
<b>Total</b>	<b>80</b>	<b>100</b>

Table 27. Do any teachers at your school currently use an instructional model that fits the "A La Carte model" description?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	10	11.1
No	61	67.8
Not Sure	19	21.1
<b>Total</b>	<b>90</b>	<b>100</b>

Question 28a. Please provide a rough estimate of your school's capacity to implement an A La Carte model along the following dimension: Hardware Availability

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Our school has little or none of the hardware needed to implement this model	24	30.4
Our school has some of the hardware needed to implement this model	39	49.4
Our school has most or all of the hardware needed to implement this model	16	20.3
<b>Total</b>	<b>79</b>	<b>100</b>

Question 28b. Please provide a rough estimate of your school's capacity to implement an A La Carte model along the following dimension: Internet Connectivity

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Internet speed would not be an issue in implementing this model	20	25.3
Internet speed would be a minor or intermittent issue in implementing this model	30	38
Internet speed would pose a major problem in implementing this model	23	29.1
Internet speed would pose an insurmountable problem in implementing this model	6	7.6
<b>Total</b>	<b>79</b>	<b>100</b>

Question 28c. Please provide a rough estimate of your school's capacity to implement an A La Carte model along the following dimension: Teacher Training

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Teachers unable to adapt	11	13.9
Teachers need significant PD to adapt	41	51.9
Teachers need some PD to adapt	20	25.3
Teachers have enough training to adapt	7	8.9
<b>Total</b>	<b>79</b>	<b>100</b>

Question 29. Has your school provided any blended learning professional development opportunities for teachers this academic year?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	13	14.3
No	52	57.1
Don't know	26	28.6
<b>Total</b>	<b>91</b>	<b>100</b>

Question 30. Have any teachers at your school engaged in blended learning professional development outside of the school?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Yes	13	14.3
No	11	12.1
Don't know	67	73.6
<b>Total</b>	<b>91</b>	<b>100</b>

Question 31. Based on your experience working with teachers in your school, please identify blended learning professional development opportunities you would like to see offered for your teachers in the future.

<b>PD Type</b>	<b>Frequency</b>	<b>Percent</b>
Classroom management	57	65.5
Blended learning models	71	81.6
Hardware	30	34.5
Software	40	46.0
Integration into curriculum	66	75.9
Data sharing and privacy	24	27.6
Real-time assessment	55	63.2
Differentiation	59	67.8
No PD	2	2.3
Other	1	1.1
<b>Total</b>	<b>87</b>	<b>100</b>

Question 32. Of the options you selected, please indicate the professional development topic you believe is the most important to offer for teachers in the future.

<b>PD Type</b>	<b>Frequency</b>	<b>Percent</b>
Classroom management	9	11.1
Blended learning models	16	19.8
Hardware	1	1.2
Software	8	9.9
Integration into existing curriculum	29	35.8
Real-time assessment/checks for understanding	4	4.9
Differentiation	12	14.8
I don't want BL PD	2	2.5
<b>Total</b>	<b>81</b>	<b>100</b>

Question 33. On a scale from 1 to 7 (7 being most interested), how interested are you in hearing more about ways to institute blended learning at your school?

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
1 (not interested)	6	6.7
2	4	4.5
3	12	13.5
4	10	11.2
5	18	20.2
6	15	16.9
7 (most interested)	24	27
Average Rank	4.9	
<b>Total</b>	<b>89</b>	<b>100</b>

Question 34. On a scale from 1 to 7 (7 being most open), how open would you be to instituting blended learning at your school next year?<sup>21</sup>

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
1 (not open)	9	10.2
2	5	5.7
3	24	27.3
4	13	14.8
5 (most open)	37	42
Average Rank	3.7	
<b>Total</b>	<b>88</b>	<b>100</b>

<sup>21</sup> Due to a programming error, it is difficult to interpret responses to the question gauging interest in blended learning in the next school year. The question asked respondents to rate their interest on a 1-7 scale, but the answer choices were limited to 1-5. We categorized all scores of 5 as interest, since 5 is the only number above the mid-point of both scales. Choices 1 and 2 are unambiguously negative, but it's difficult to know what respondents intended if they answered 3 (neutral on the 5-point scale but negative on the 7-point scale) or 4 (positive on the 5-point scale but neutral on the 7-point scale).



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*Special thanks to the William Penn Foundation for its generous support of PERC. The opinions expressed in this report are those of the author(s) and do not necessarily reflect the views of the William Penn Foundation.*