Blended Learning in Context: How District, CMO, and School Environments Enable and Constrain Blended Learning Implementation

Patricia Maas

A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2015

Reading Committee:

Michael Knapp, Chair
Betheny Gross
Tom Halverson

Program Authorized to Offer Degree:

College of Education

University of Washington

Abstract

Chair of the Supervisory Committee:
Professor Michael Knapp
Education Leadership and Policy Studies

Blended Learning in Context: How District, CMO, and School Environments Enable and Constrain Blended Learning Implementation

Patricia Maas

Abstract

This dissertation is a comparative case study on the implementation of "blended learning," or the combined use of virtual and face-to-face learning, in three schools. The research links literature on blended learning practices to that on organizational learning and innovation in education to examine how context impacts blended learning implementation at two levels: the school level and the district or CMO level. At the school level, I explore how various aspects of school culture, leadership, and resource allocation decisions influence how educators' use blended learning to personalize instruction. At the district or CMO level, I consider how various forms of support and instructional and staffing autonomy impact school environments, and subsequently, impact personalized instruction through blended learning.

I find that school communities using blended learning to personalize education hold themselves internally accountable for improvement using technology and exhibit strong social contracts between both teachers and administrators, and students and adults. In these cases, internal accountability for personalized blended learning use is enabled by a set of school-level practices, including: explicitly linking innovation and blended learning to the school's mission, modeling and showcasing innovation and technology use, and emphasizing public practice, collaboration, and teacher voice to support innovation. I also find factors that span school and district or CMO-level practices to impact the strength of adult social contracts. These factors include: the quality of professional learning systems tied to blended learning use, amount and allocation of staff time, teacher choice and staffing to match school mission, availability of blended learning tools and specialized knowledge, external structures to support teacher innovation, available funding, and the freedom to quickly shift resource allocations. I similarly find student-adult relationships to be influenced by factors spanning school and district or CMO-level practices, including: explicit instruction on mindset and non-cognitive skills, school choice for teachers and students, and a history of school success. These findings contribute to theory on the implementation of innovative methods, such as blended learning, in schools and raise important questions for future research.

Keywords: blended learning, charter management organizations, organizational learning, educational innovation

TABLE OF CONTENTS

List of Figures

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to Dr. Mike Knapp, who worked tirelessly in his last days before retirement to provide me with his always-thoughtful feedback and advising. Dr. Knapp's dedication and competence is rivaled only by his kindness and sense of humor.

I am also indebted to Dr. Marge Plecki, who coached me through the first three years of my doctoral studies, always putting pragmatism and progress before convention. I would also like to thank Drs. Betheny Gross, Tom Halverson, and Chris Adolph for their thoughtful feedback and coaching on this work, and Robin Lake, Paul Hill, Mike DeArmond, Larry Miller, Sarah Yatsko, and all of my other colleagues at the Center on Reinventing Public Education who have provided me professional opportunities, mentorship, and support as I have progressed through my doctoral career.

Finally, I would like to thank the members of the school communities that participated in this research, opening sharing their thoughts, experiences, and classrooms with me.

Chapter 1

The Research Problem: Understanding The Dynamics of An Emerging Instructional Innovation

Blended learning is a term that has recently spread aggressively through education communities. The development of computer adaptive software or other technology that allows students to navigate content at a speed and level that is appropriate for each individual child, as well as the extensive use of such technology in some high profile CMOs like Rocketship Education has piqued the interest of many in education spheres. In the last several years CMOs including Aspire Public Schools, several KIPP regions, Alliance College-Ready Public Schools, and Summit Public Schools have integrated blended learning into school-wide instructional systems.

Districts have also shown interest in using blended learning systems. Small districts like Adams 50 in Colorado and Mooresville Graded School District in North Carolina have extensively integrated blended learning into their instruction. Now, assisted (and perhaps convinced) by philanthropic dollars, larger districts are also entering the blended learning space. The Gates Foundation's Next Generation Learning Challenge and NextGen Systems Initiative support schools, districts, and systems that facilitate the spread of blended learning and the Carnegie Corporation of New York has awarded grants to six large urban districts to open new, "innovative" high schools in the cities.

But in light of all of this activity, what exactly "blended learning" looks like has remained somewhat mysterious, especially in high school contexts. The most commonly

used definition for blended learning comes from the Clayton Christensen Institute for Disruptive Innovation: "a formal education program 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" (Staker & Horn, 2012). But this definition leaves substantial room for variation in models. Researchers at the Clayton Christensen Institute outline several different possible models that I will discuss in-depth later in this chapter (students rotate between stations in one classroom, students rotate between face-to-face instruction and a computer lab where they receive online instruction, students self-pace through online content with teachers or paraprofessionals in the room, etc.), but within any of these models, the degree to which education is truly *personalized*—students have control over time, place, path and pace— can vary substantially. One school that considers itself to use blended learning may have completely changed its scheduling, teacher roles, and physical spaces while another may have adopted a program in a few classes that allows students to work through a set of virtual flashcards at their own pace for a half hour each week. Both schools technically meet the Christensen Institute's definition of blended learning, but clearly the first school is using it (or at least attempting to use it) in a way that more deeply personalizes student learning. This wide variation in model and depth of "blended learning" use has been a major obstacle in evaluating the implementation and impacts of "blended learning" as an intervention or educational method.

Acknowledging that models and "innovation depth" vary greatly, we lack an understanding of what structures in and out of a school best support successful implementation of any blended learning model, or how these support structures might vary according to a system or school's blended learning vision. How can districts or

charter management organizations best oversee and manage blended learning use? What aspects of school environments and cultures enable or constrain blended learning use? Do these factors vary by model and vision?

A substantial body of literature supports the claim that learning organizations, or organizations that focus on continuous improvement (Louis, 2006), are best equipped to implement change (McCharen, Song, & Martens, 2011). But it is yet unclear how education leaders are leveraging continuous improvement mindsets to implement blended learning in high schools. In addition, it is yet unclear how the overarching CMO or district structure impacts a school's ability to function as a learning organization. As schools of choice, charter schools within CMO structures may attract faculties and families that have beliefs that align to organizational goals and processes and are therefore particularly trusting of the organization as it undergoes change. Added flexibilities granted through charter status may also allow CMO schools to use quick, iterative cycles of implementation and revision in a way that facilitates learning and is not possible in district settings. CMO schools may be particularly well situated to act as learning organizations, compared to stand-alone charter schools, because CMO schools tend to receive overhead support and between-school communities of practice that strengthen organizational capacity and in turn, the opportunity to function as an innovative learning organization (Damanpour, 1991; Frank, Zhao, & Borman, 2004). However, there is little empirical work on organizational learning and innovation in CMO and district contexts to support these conjectures.

I approach this research with a conceptual framework derived from literature on innovation in schools and broader sets of organizations. This framework supposes that

characteristics of "learning organizations" emerging from these literatures also apply in the case of blended learning implementation. It is likely, however, that the blended learning case is particular and requires schools to act as learning organizations in slightly new or nuanced ways—that some characteristics of learning organizations are particularly important or unimportant for schools to use blended learning to personalize education, or that school characteristics interact in a distinct manner during the implementation of this particular innovation. Yet, no research has explored these questions.

This research addresses these knowledge gaps, specifically seeking answers to the questions: *How do school-level organizational characteristics associated with organizational learning enable or constrain the implementation of blended learning in these contexts? And how do CMO and district structures enable and constrain schools to function as learning organizations?* These questions are critically important as more schools attempt to implement blended learning and attempt to transfer blended learning practices across contexts.

This study examines how contextual factors, at school and district levels, impact schools' ability to personalize instruction using blended learning. Literature suggests that a school's ability to act as a learning organization will moderate its ability to successfully do so (McCharen, Song, & Martens, 2011; Louis, 2006). Therefore, I give particular attention to how schools' contexts impact aspects of organizational learning, including school-wide cultures, organizational structures, leadership practices, and resource availability and allocation, and how these factors in organizational learning enable or constrain the use of blended learning to personalize students' learning in classrooms.

Locating the Research Problem in Literature on Innovation, Organizational Learning, and Innovative Educational Contexts

In recent years, the use of blended learning, or the combined use of face-to-face and virtual education, has been gaining public interest. Advocates claim that new computer technology enables differentiation and personalization in a way that has never before been possible and that assessing and delivering basic content through computers frees up time for teachers to engage deeply with students through small group instruction (Murphy et al., 2014; Arnet, 2014; Aspire Public Schools, 2013). However, advocates also stress that technological innovations are just tools and are only useful if implemented in a context with high quality teachers and healthy school cultures (Cohen, 2013; Stewart, 2014).

The importance of this point about contextual and organizational factors cannot be overstated. Institutions have a history of latching onto education fads without critically engaging in questions about what the reform is, what optimal implementation looks like, no less desired outcomes, and what characterizes weak or strong contexts for implementation. As blended learning attracts increasing amounts of attention and money, it is critical that we understand the organizational conditions under which it can be implemented most effectively and what structures enable the existence of those conditions.

There are substantial bodies of literature that may help answer these implementation questions. In doing so, I draw from scholarship on innovation and organizational learning, both in and out of education contexts, which are particularly

helpful for examining the dynamics of blended learning implementation, as they keep in view well established tendencies of organizations that are likely to express themselves with this specific category of innovative instructional practice, as well as many others. Broad bodies of literature on innovation and organizational learning identify key aspects of organizational culture, structures, and contexts that enable or constrain innovative practices. Literature on the innovation process and organizational learning in education substantially overlaps with the broader bodies of scholarship aimed at organizations in other sectors and helps to translate findings from a range of contexts to those relevant to this study.

The study also draws from literature on charter schools and charter management organizations, a specific context in which blended learning appears to be flourishing. Although charter schools did not give rise to substantial instructional innovation in their early years, charter schooling has its roots in theories that predict the charter structure will enable new and creative educational approaches (Davies & Quirke, 2005; Chubb & Moe, 1990). These theories, which once appeared to incorrectly predict how the charter structure affects schools' desire and ability to innovate, are resurfacing as relevant to the emergence of new instructional technologies in charter and district contexts today (Lake & Maas, 2015; Hodas, 2015).

I begin this chapter by defining key terms, then move on to review several theories that may explain the education sector's resistance to innovation. I then describe why blended learning is a powerful and potentially unusual case of innovation in education and present a literature review that I build on in my conceptual framework on what we know about the characteristics and structures of CMOs, district schools, and on

the relationship between innovation and organizational learning in schools. I conclude by presenting the focus of my inquiry, including main research questions, the rationale for my research, and the organization of the remainder of this dissertation.

Definition of Key Terms: Innovation, Organizational Learning, Blended Learning

Innovation is a term that has been used in a wide range of literatures to describe ways in which new ideas and practices are introduced into markets and fields. Frequently used in economics and business literatures, innovation is often linked to improved production processes and profits. For example, Joseph Schumpeter classically defined innovation in terms of quality of goods, methods of production, sources of supply, new markets, and industry organization (The European Network for Rural Development, "n.d."). More recently, business scholar Peter Drucker is attributed with defining innovation as a, "specific instrument of entrepreneurship, the act that endows resources with a new capacity to create wealth" (Goossen, "n.d.").

Innovation in education contexts. These definitions are clearly not fully applicable to the education context, in which profit is very rarely considered a primary outcome measure. A more appropriate definition comes from The U.S. Department of Education, which defines *innovation* as, "a process, product, strategy, or practice that improves (or is expected to improve) significantly upon the outcomes reached with status quo options and that can ultimately reach widespread effective usage" (U.S. Department of Education, 2014). By this definition, the systematic adoption of blended learning to improve personalization is "innovative" in that it involves the use of an approach that is

new to an organization, reaches beyond "status quo" methods, and is expected to improve outcomes.

This definition of innovation in education, however, is still broad. To make the topic more manageable, scholars have broken "innovation" down into more precise components. Researchers in the field have categorized innovations as *administrative innovation* which concerns management structures and mechanisms, and *technical innovation*, which concerns products, services, and "production process" technology (Daft, 1978; Damanpour, 1991; Damanpour, 2010). In an education context, technical innovations would be those related to teaching and learning. In addition, innovations can be characterized as *incremental* if they make small changes to existing systems, or *radical* if they fundamentally change processes or output in a way that renders old products or ways of working obsolete (Meyer, Brooks, & Goes, 1990; Crossan & Apaydin, 2010). Because this study examines blended learning, which purports to be a technical, radical change in the way the school approaches and conducts instruction, I focus my literature review on these kinds of innovations.

Learning organizations and innovation. The characteristics of any innovation impact if and how individuals in an organization adopt it (Straub, 2009; Rogers, 1995), but the ability of schools, and the districts or CMOs in which they sit, to act as *learning organizations*, which communicate internally in ways that enable them to adapt to changing circumstances, may also be foundational for the successful school-wide implementation of blended learning. Like "innovation," "learning organization" has a wide set of definitions, most of which broadly describe a culture of collaboration and responsiveness to emerging issues affecting the organization (Argyris & Schon, 1996;

McCharen et al., 2011). Literature suggests that the following school attributes, which I will discuss in depth in Chapter 2, are associated with organizational learning in schools:

- Communication, collaboration and distributed leadership (Frank, Zhao & Borman, 2004; Wahlstrom & Louis, 2008),
- Internal accountability (Abelmann et al., 1999; Elmore, 2006),
- Trust (Bryk & Schneider, 2002; Louis, 2006),
- Clear, shared mission and goals (Leithwood et al., 1998; Silins, Mulform & Zarins, 2002),
- Use of performance data to monitor goals (McCharen et al., 2011),
- High expectations and a culture of continuous improvement (Chandler, Keller & Lyon, 2000),
- A culture with a focus on student learning (Edmonds, 1979; Whitman, 2008; Merseth et al., 2010).

Many scholars have noted that organizational learning facilitates innovating and implementing new processes in schools (Mulford, 1998; Silins, Mulford, & Zarins, 2002; McCharen, Song, & Martens, 2011). Scholars studying the intersection of organizational learning and innovation in school communities assert that, "organizational knowledge created through the organizational learning process forms the basis for practical application of innovation" (McCharen, Song, & Martens, 2011, p. 678). That is, learning organizations are a helpful, if not necessary, context for innovation and the implementation of new systems.

Blended learning. The specific innovation that the proposed study examines is *blended learning*. Blended learning is a term that has been loosely applied to a wide

range of technology use in education, but as noted earlier in the chapter, I use the increasingly accepted definition, "a formal education program 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" (Staker & Horn, 2012; Murphy et al., 2014). Two elements of this definition are worth further description. First, blended learning is a *formal education program*, meaning that blended learning is a routinized model. Individual teachers occasionally using technology to aid in teaching and learning does not qualify here as blended learning. For the purposes of this study, to qualify as a "formal education program," I require blended learning to be systematically implemented in at least four classrooms in a school. Second, blended learning *allows students some element of control* over time, place, path, and/ or pace, in theory, increasing content personalization for students. Using interactive whiteboards as simply a blackboard replacement or assigning students to conduct research on computers for a project given to the whole class do not qualify as blended learning. Blended learning is an intentional program in which instruction is regularly student-led and student-paced, for at least a portion of the school day.

Blended learning is still new and takes many forms, including station rotation, lab rotation, individual rotation, the flipped classroom model, and other systems more focused on virtual learning including flex, a la carte, and the enriched virtual model (Christensen, Horn & Staker, 2013). In the station rotation model, students rotate within a classroom among various methods of learning. Lab rotation involves rotation between rooms, and in individual rotation students rotate between learning modalities on an individually determined, but fixed schedule. The flipped classroom assigns students to

receive direct instruction virtually as homework, then uses class time for practice. The flex model uses online learning as the primary method of instructional delivery, but has teachers of record on site for support. A la carte involves students taking one of more courses entirely online, while taking other courses in a non-virtual school setting. Finally, in an enriched virtual setting, students divide their time between virtual and face-to-face instruction within a single course (Christensen, Horn & Staker, 2013). Schools appear to be experimenting with all of these versions of blended learning (Blended Learning Universe, May 15, 2015), but little research exists on which kind of blended learning is most effective or why. The concern of this study is with blended learning that attempts to personalize education, in whatever form it may take within the schools under study; I am not particularly concerned with whether they are more or less "effective," as this study does not assess effectiveness, though school or district staff's perceptions of their effectiveness may be part of the story of how and how well they are implemented.

What Has Stood in the Way of Innovation in the Past?

To examine the implementation of blended learning or any innovation in schools, one must first recognize that various conditions, barriers, and historically rooted patterns may stand in the way. These may sit in basic assumptions about schooling, in the bureaucratic structures that surround schools, in incentives systems, and in the organizational environments for schooling.

The "grammar" of schooling. Despite countless incremental innovations, few can dispute that the degree of content personalization that the average student receives has seen little change in the last several decades. Classes are still generally teacher-led

and students tend to progress through lessons at the same pace, regardless of their ability level. A culture of traditionalism in many schools, in teacher preparation programs, and among parents likely contributes to a tendency toward marginal change. "Innovations" adopted in districts and schools that have done little to further student learning may also have nurtured educators' skepticism towards new methods. Historians and those studying information and communication technologies (ICT) have argued that the "grammar" of schooling, or the organizational norms of schools, including graded schools that use Carnegie units in teacher-led classrooms, have defined what schooling is and have therefore been very resistant to change (Tyack & Tobin, 1994; Arbelaiz & Correa Gorospe, 2009). The legitimacy associated with the "grammar" of schooling may explain why we have seen little innovation from any sector of K-12 education, even private schools, which operate in a relatively open marketplace (Baker, 1992; Davies & Quirke, 2005).

Traditions specifically related to the physical layout of schools have also stood in the way of fostering organizational learning environments in schools. Dan Lortie (1975) famously described schools to be organized like egg crates, in which teachers work in isolation in their classrooms and therefore have very few opportunities to learn from one another and spread innovative ideas. Lortie's notion that isolated work environments stand in the way of learning and innovation is supported by subsequent research on the social nature of professional learning (Honig, Copland, Rainey, Lorton, & Newton, 2010).

Bureaucratic systems and little incentive to change. Others have asserted that a lack of innovation in education is attributable to the district structure, which they argue is weighed down by a culture of traditionalism, a bloated bureaucracy, and little incentive

to change (Chubb & Moe, 1990; Smarick, 2012). Limited teacher and administrator autonomy and cumbersome structures in districts, which some argued prevented innovative change, were some of the early motivations for charter schooling, which would grant schools increased autonomy and agility (AFT, "n.d"; Chubb & Moe, 1988; Lubienski, 2003; Loeb, Valant, & Kasman, 2011).

The early years of the charter movement, however, saw very little technical, radical innovation—at least, in the core technology of the school. In one sense, this may be understood as resulting from the focus of charter theory on the governance structure of schooling, and the goal of setting up an organizationally more flexible and less constrained environment in which school-based educators came together around a clear mission. While innovative approaches to teaching and learning might be the result, there is nothing inherent in charter theories that would necessarily invite instructional changes that were radical departures from past teaching practice. Another potential reason for this was limited capacity. Innovation literature finds slack resources to be a predictor of organizational innovation (Damanpour, 1991; Frank, Zhao, & Borman, 2004). During the first decade of the charter movement, charter schools were just learning how to operate, and often with relatively few resources. Very few charter schools received support from a network and many struggled with finances, operations, and management (Mead & Rotherham, 2007).

Stagnant organizational environments for schooling. Finally, population ecology and inertia theories (Hannan & Freeman, 1984) point to and explain relatively stagnant school environments using organizational theory. These theories, relevant to existing schools in both the traditional and charter sectors, assert that new ideas in a field

often surface with the creation of new organizations (Hannan & Freeman, 1984), rather than pressure from other organizations to change. Even when organizations operate in a free market structure, Hannan and Freeman (1984) recognize that many incentives exist to encourage structural inertia. Internal pressures to keep organizational changes at the margins include internal politics, sunk costs in facilities, equipment, and personnel, and tendencies for precedents to become standards. In addition, organizations' desire for legitimacy, which often prompts conformity to externally accepted norms, and barriers to entry and exit in the sector encourage organizational inertia (Hannan & Freeman, 1984). Therefore, population ecology and inertia theory predict that "population renewal," or the consistent opening and closing of organizations in a marketplace, is necessary to make meaningful progress in a given field (Hannan & Freeman, 1984). Without population renewal through a dynamic school marketplace in education, Hannan and Freeman would predict the legitimacy tied to the grammar of schooling to virtually ensure the preservation of the status quo.

These ideas about basic barriers to innovation in education and more broadly in organizational systems set the stage for considering the case of blended learning. Here, the emergence of new organizational forms in education, embodied in charter schools and the charter management organizations that oversee charter schools (in contrast to more traditional educational organizations) offer a way to probe and extend what we know about the dynamics of innovation in schools, especially as it appears in the classroom.

Blended Learning: A Powerful Case of System Support for Innovation in Education

Blended learning is a powerful case for the study of how school structures at the school and oversight levels enable or constrain the implementation of new instructional methods for several reasons: (1) the most aggressive blended learning systems challenge schools and teachers to fundamentally alter the teaching and learning process. When advocates discuss blended learning, they commonly refer to personalized methods that revolutionize how content is delivered and how students learn (The Center for Education Reform, 2014; Paulson, 2014). (2) Because of its nebulous definition, schools and teachers have taken approaches to blended learning that vary in the extent to which they truly allow students control over time, place, path, and/or pace as they learn. There is no one clear blueprint for blended learning and at least right now, there is no end "ideal" of what it should look like. Instead, the nascent concept lends itself to the kind of iterative and responsive thinking described in literature on learning organizations (Argyris & Schon, 1996; McCharen et al., 2011; Ries, 2011). As such, blended learning differs from many initiatives in education that have been more rigid and focused on high fidelity implementation, over implementation that best fits the needs and resources in a particular school (O'Connell, 2007; Protheroe, 2008). (3) Blended learning systems are arriving at a time of unprecedented development of technology-based tools, activities, and systems in society at large (consider, for example, the explosion of social media, digital gaming, and ways to interact with the Internet, all of which are highly visible and potentially engaging to young people). Because schools often mirror societal conditions, and relate to them in varying ways, blended learning may have unusually strong reinforcement in teachers' and students' experiences outside of school.

Because of its ambitious goals, historians and innovation experts alike would predict the widespread implementation of blended learning models that truly revolutionize education to be unlikely, at least in the short term (Tyack & Cuban, 1995; Christensen et al., 2008). But some schools, particularly those affiliated with CMOs, have implemented blended learning in a way that indeed, reconfigures teaching and learning in the majority of classrooms (Murphy et al., 2014; Horn & Greenberg, 2013).

Early research, policy, and media reports describe these schools in ways that echo descriptions of learning organizations (Argyris & Schon, 1996; McCharen et al., 2011). These schools often use distributed leadership practices, tend to collect and collaboratively make use of data, and constantly refine their model for improvement (Murphy et al., 2014; Horn & Greenberg, 2013). Therefore, addressing the question, "in what ways do school and oversight structures (particularly CMO and traditional district structures) enable or constrain innovations and the implementation of new instructional methods," is practically relevant and helps to fill gaps in the literature around how oversight structures affect organizational learning and the implementation of innovations in schools.

System-Level Contexts for Instructional Innovation:
High Performing CMOs

CMOs vary substantially in quality, but a subset of charter schools affiliated with CMOs have consistently outperformed traditional public schools serving similar student populations (Ferguson et al., 2012; Woodsworth & Raymond, 2013). High performing CMOs frequently serve students from disadvantaged families (CREDO, 2009; Ferguson

et al., 2012) and their unprecedented ability to create networks of schools that produce impressive student test scores with traditionally low-performing populations has attracted significant attention from the media, politicians, and other educators. Many of the highest performing CMOs are now implementing blended learning, and in some cases are acting as models for blended learning use. Therefore, it is helpful to understand their characteristics and practices. CMOs are positioned to differ from traditional schools in three ways: politically, culturally, and structurally (Hill and Maas, 2015). Although not all CMOs have capitalized on their freedoms to differentiate themselves on these dimensions, research on the highest performing CMOs illustrates how many school communities have done so successfully (Dobbie & Fryer, 2011; Whitman, 2008).

More stable political environment. A board that helps to direct and preserve the school's mission, and generally has some authority over school leader hiring almost always oversee CMOs or CMO schools (National Resource Center on Charter School Finance and Governance, 2008). Although charter schools have seen their share of disruption due to board disagreements (Hill & Lake, 2007), CMOs have not seen the same kind of leadership churn and sporadic direction changes that many districts have. This is likely because unlike in many districts, CMO executives' and board members' positions are not publically elected and are thus not subject to the public's diverse and ever-changing interests. In this way, CMOs are a relatively stable political environment for introducing new practices.

Culture emphasizing high performance and relational trust. The highest performing CMO schools tend to have a clear mission that emphasizes academic performance and stresses high expectations for teachers and students (Dobbie & Fryer,

2011; Whitman, 2008). School expectations, missions, and methods are clearly communicated to prospective teachers, students, and administrators and individuals can choose to join the school community (or not) with an understanding of the school's policies and culture in mind. Clear and high expectations include both academics and behavior in high performing CMOs—a focus on discipline and order in a school is predictive of high performance in CMOs (Ferguson et al., 2011) and is a cornerstone of many high performing charter schools (Dobbie & Fryer, 2011; Angrist et al., 2011). Schools that have such a culture may be particularly conducive to implementing blended learning, which appears to demand tight classroom management (Murphy et al., 2014).

Charter schools also rely heavily on trust between teachers and administrators, at least in part because the schools tend to be nonunionized and lack both formal grievance processes for teachers and formal evaluation tools (Gross, 2011). Perhaps to cope with this circumstance, successful charter schools have often developed extensive communication norms and distributed leadership practices (Merseth et al., 2010; Whitman, 2008). In high performing charter schools, teacher support often comes in the form of extensive teacher coaching and feedback systems (Furgeson, 2011; Dobbie & Fryer, 2011). These coaching and feedback systems tend to be framed by school goals and expectations and include frequent peer observations and reflections (DeArmond, Gross, Bowen, Demeritt, & Lake, 2012). Such supports are likely to contribute to organizational learning and the iterative implementation of blended learning (Silins et al., 2002; Birman, Desimone, Porter & Garet, 2000). Indeed, initial portraits of blended learning CMO environments include descriptions of teacher supports, generated principally through cultures of collaboration (Bernatek, Cohen, Hanlon, & Wilka, 2012).

Structures supporting continuous improvement and non-traditional staffing. Successful CMOs tend to value continuous improvement and frequently exercise their freedoms and agility to change quickly when systems are not working (Lake, Dusseault, Bowen, Demeritt, Hill, 2010; Farrel, 2012). The schools use feedback systems including classroom observations and open dialogue in conjunction with data that measures progress towards individual and organizational goals to guide changes in practice (Lake, Dusseault, Bowen, Demeritt, Hill, 2010; Farrel, 2012; Hoxby et al., 2009; Dobbie & Fryer, 2011; Merseth et al., 2010; Whitman, 2008). High performing CMOs not only tend to have systems for tracking test scores, but several track data on students' long-term outcomes and compare these data to organizational goals to shape future priorities (KIPP, "n.d."; YES Prep, 2012). Such structures may prove critical in improving the use and assessing the value of new methods.

As charter schools, CMO schools also tend to have more liberty in deciding who to hire than traditional public schools and tend to hire for "fit" with this mission (DeArmond, Gross, Bowen, Demeritt, & Lake, 2013; Lake et al., 2010), intentionally building schools on a foundation of common visions and goals. In part because of their staffing freedoms, high performing CMOs rely heavily on nontraditional pipelines like Teach for America, which select participants from selective colleges and universities, who often did not major in education (DeArmond, Gross, Bowen, Demeritt, & Lake, 2012). This reliance on teachers with non-education backgrounds potentially increases the diversity of skills that teachers bring to CMOs, but may also mean that the schools allocate substantial resources to training teachers on basic skills. These kinds of teaching staff, on the one hand, are likely to be willing to work hard, excited by "new ways" of

approaching the educational tasks, idealistic abut the prospects for success, and technologically adept. On the other hand, their inexperience may make them less able to enact forms of teaching that have few precedents and that may make more demands on them as orchestrators of student learning.

System-Level Contexts for Instructional Innovation:
Traditional Districts

The system level context for instructional innovation contrasts sharply in traditionally organized school systems. Unlike the highest performing CMOs, districts have struggled to create conditions that consistently support high trust and related conditions in mission-driven schools. When interventions have attempted to build these cultures and capacities in schools, they have consistently faced barriers. Political factors, including district priorities that change with leadership, political rivalries among decision makers, an emphasis on fairness to adults, and pressures for all schools to provide all things to all students have created barriers to change in districts (Hill, Campbell, & Harvey, 2000; Hill & Celio, 1998). Perhaps as a result of this political turbulence, cultures and attitudes in district offices are often characterized by accountability based on compliance rather than effectiveness, and an overall acceptance of the status quo—attributes that have repeatedly frustrated attempts at change in districts (Hill & Celio, 1998). Finally, structural challenges, including low quality teacher and leader training programs, rigid policies, weak support for instructional change at the district level, and principals' inability to freely hire and dismiss staff members have challenged even the most promising interventions (Cohen, Peurach, Glazer, Gates, & Goldin, 2014; Berends,

Bodilly, & Kirby, 2002; Shear, Means, Mitchell, House, Gorges, Joshi, Smerdon, & Shkolnik, 2008). Notably, when district reforms have been successful, principals' ability to hire faculty for their beliefs and capacities has enabled change, as have intentional protections from district turbulence (Villavicencio & Marinell, 2014; Darling-Hammond, Ancess, & Ort, 2002).

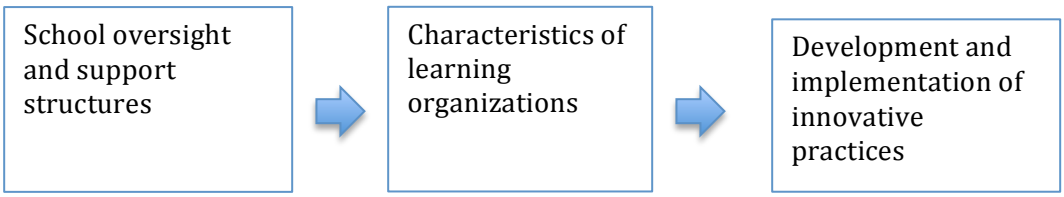
Although these barriers to change have manifested themselves most commonly in district settings, it is possible that this is only true because the charter sector is young and comparatively small. If the charter sector does not take advantage of its autonomies, fight to preserve its agility, and actively resist inertia, it will likely encounter the same sets of political, cultural, and structural barriers as it matures and attempts to change.

Innovation and Organizational Learning in Schools

While conditions at the system level enable and constrain the initiation and continuation of innovative instructional approaches, identifiable conditions within schools, which in many ways exist separate from larger system level contexts, also play a critical role. That said, particular links can be identified between the system-level conditions and the school level conditions. In this regard, it is reasonable to conceptualize certain structural elements—at both system and school levels— to provide a set of circumstances that create fertile ground for the creation of learning organizations. Organizational learning, in turn, creates conditions that enable innovation and the implementation of new practices (Mulford, 1998; Silins, Mulford, & Zarins, 2002; McCharen, Song, Martens, 2011). The rudimentary thinking is illustrated in Figure 1 below:

Figure 1. System-Level Contexts, Organizational Learning,

and Innovative Practice



There is no single set of characteristics that definitively classifies a school as a learning organization, but education literature has highlighted the importance of many school-level organizational characteristics that enhance organizational learning and promote innovation in schools. Important factors that contribute to organizational learning include: a trusting, supportive learning culture; collaboration amongst teachers, including open communication and honest feedback; a leadership structure that allows teachers to meaningfully participate in decision-making; a willingness to take risks in attempting new practices, as well as incentives that support risk-taking; a school-wide spirit of continuous improvement, and teachers' commitment to their own learning (Louis, 2006; McCharen, Song, & Martens, 2011, Leithwood, Leonard, Sharratt, 1998). Scholars have also noted key leadership attributes that foster organizational learning, including the articulation of a clear vision and assistance in setting group goals, the conveyance of high expectations for the community, encouragement of collaboration, and distributed leadership (Leithwood et al., 1998). Others have noted the importance of school coherence, teacher autonomy and shared goals for successful organizational learning and creativity (Frank, Zhao, & Borman, 2004; Higgins, Ishimaru, Holcombe, Fowler, 2011). These findings align to leading business scholars' dimensions of learning organizations: systems thinking, a focus on adult learning, employee's underlying beliefs,

team learning through iterations of practice and performance, and shared vision (Senge, 1990).

Literature on organizational learning in education has primarily focused on the school level. When the literature has examined districts' impact on school level organizational learning, it has focused on district actions and cultures—districts in which organizational learning occurs tend to have a clearly defined vision, foster collaboration, and encourage school staff to participate in district decision-making (Leithwood et al., 1998). By contrast, the literature says very little about what kinds of oversight structures enable these cultural characteristics to develop and how those structures enable or constrain innovation in schools.

Specifically, the literature lacks answers to the questions concerning how the CMO and district structures may enable or constrain schools to function as learning organizations. And more specifically, the literature has yet to explore how school-level organizational characteristics associated with organizational learning might enable or constrain the implementation of blended learning in these contexts.

Inquiry Focus and Main Research Questions

Literature on reform and innovation in CMO and district settings, coupled with broader literature on organizational theory and change, finds that system-level contexts contribute substantially to organizational learning and innovation. Charter management organizations are structured in a way that literature suggests will enable the provision of both the supports and autonomies that are necessary for effective change. CMOs, however, are relatively young organizations and have rarely, if ever, before attempted

large-scale technical change. Therefore, it is yet unclear if their structures are as well suited to incubate instructional innovation as they appear to be.

Blended learning is a reform entering both district and CMO high schools that proposes fundamental changes in instruction and will test how the two contexts support change. As a developing phenomenon, however, how districts and CMOs imagine blended learning, what it looks like in practice, and if characteristics of learning organizations, as they are traditionally understood, support blended learning implementation in the same way that they have supported other innovations are also important questions for this research to consider. These lines of inquiry lead me to the following central research questions:

In high schools within CMO and district contexts,

1. *What do blended learning instructional practices look like inside classrooms?*
2. *How do these schools structure and support the implementation of blended learning?*
3. *What within the school (and larger oversight context) enable or constrain the implementation of blended learning?*

These foci will respond to questions yet unanswered in the literature about how CMO and district structures enable and constrain schools to function as learning organizations. The research will also contribute to a growing body of literature on what blended learning systems look like in high schools, and how they are being implemented in various contexts.

Rationale for this Research

Both CMOs and blended learning are currently receiving substantial political and philanthropic attention. Yet, there is a paucity of research on how high performing CMOs' structures interact with instructional change, specifically around blended learning. The proposed research will add to existing scholarship by using blended learning to link existing literature on organizational conditions in high performing CMOs to that on innovation and organizational learning in schools.

The use of blended learning is likely to expand within the charter sector and beyond and schools of all kinds are likely to seek models of practice. If others turn to high performing CMOs as models of institutionalized blended learning implementation, it is critically important that they consider salient organizational characteristics of the schools and how those characteristics impacted blended learning innovation and implementation. This research provides a close look at organizational practices and conditions in several different contexts and how these contexts shape interactions in the instructional core as schools implement blended learning. The study will both help to build theory and provide valuable information to the schools and CMOs participating in the study, which may be eager to reflect on their new methods. As other schools consider expanding blended learning practices, both achievements and obstacles faced by these schools and their context are crucial considerations.

Organization of this Document

The next chapter of this document explains the conceptual framework that provides a foundation for my inquiry and links it to supporting research. In Chapter three I describe my methodology and explain why it is appropriate for my study. I dedicate

chapters four and five to documenting this study's findings. Chapter four sets the stage for my broader findings, explaining how individuals within CMOs, districts and schools envision blended learning and how they have adjusted structures to facilitate implementation. Chapter five explains organizational factors at the school and district or CMO level that enable and constrain the use of blended learning that personalizes education for students. I conclude in Chapter six with a brief synthesis and summary of findings, along with an interpretation of the larger meanings of these findings for theory and practice. In chapter six, I also discuss important limitations and the work's practical and theoretical implications.

Chapter 2

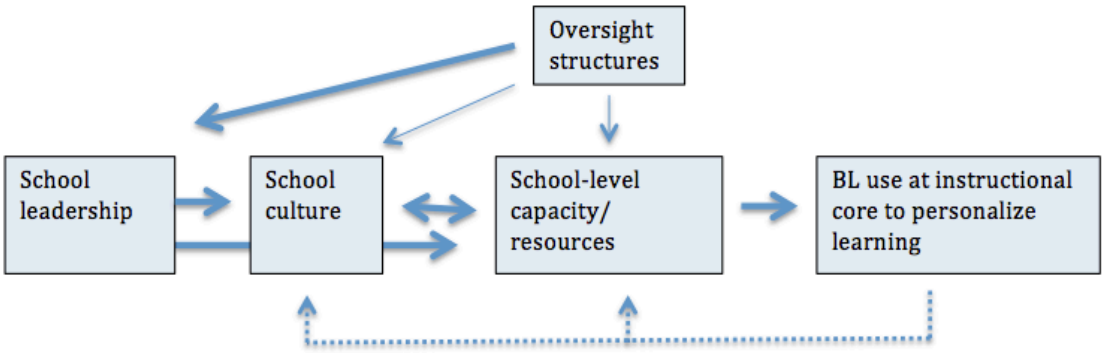
Conceptual Framework: Organizational Conditions That Shape Innovation In The Instructional Core

This study explores how school structures, cultures, and practices—both at the school and CMO or district levels—enable or constrain schools' ability to act as learning organizations, and in turn, enable or constrain innovation and the implementation of new instructional methods. My particular focus is a new approach to instruction that is rapidly gaining popularity, which integrates technology and classroom pedagogy in an attempt to personalize education. Organizational learning and innovation literatures highlight a number of factors associated with successful organizational change. I have drawn from these literatures to develop the conceptual framework described in this chapter, which identifies organizational characteristics that may be particularly salient to my research.

The conceptual framework that I present illustrates how multiple contextual levels that affect teaching and learning may interact. As shown in the Figure 2, broad factors thought to influence the implementation of blended learning for personalization at the instructional core are: school oversight structures, school leadership practices, school culture, and school-level resources.

Figure 2. Framework for Contexts Influencing

Blended Learning Implementation



The oversight context likely has strong implications for school leadership— both who is hired to school leadership positions and how principals manage their schools. In addition, the oversight context impacts school culture and school-level capacity and resources, both directly, and as moderated by leadership. The framework in Figure 2 also illustrates school leadership's influence on school culture and resource allocation, as well as the interaction between school culture and resource levels/ allocation and that interaction's influence on the use of blended learning at the instructional core to personalize learning. Finally, if blended learning does, in fact, alter teaching and learning in the school in meaningful ways, it is possible that that change will impact the broader school culture and future resource decisions.

Drawing from scholarship on organizational learning, innovation, and the implementation of blended learning, in this chapter I discuss characteristics related to oversight structures, school leadership, school culture, and school-level capacity/ resources that are associated with organizational learning and organizational innovation

that, working in the structure of this framework, may have an impact on the implementation of blended learning in classrooms. Some of the particular practices related to oversight structures, leadership, and culture that I highlight in this chapter are not specific to any particular innovation (such as blended learning), but instead set the stage for supporting various possible innovations. Others target this innovation specifically.

Finally, community context is not illustrated, but is implied, in this framework. Although my study is limited to schools serving students from low-income neighborhoods, variation in demographics and parent engagement may influence school-level characteristics.

Organizational and Contextual Conditions in Systems and Schools That Support or Inhibit Instructional Innovation

I broadly cluster potentially influential organizational and contextual factors into four categories: (1) CMO or district (oversight) context, (2) school leadership (3) school culture and structures, and (4) practice-specific resources, and. While I emphasize the CMO context as one that might be particularly supportive of blended learning, I also more generically consider organizational and contextual conditions that could appear in any school system.

Conditions for Organizational Learning and Innovation in CMO and District Contexts

CMOs lend schools the autonomy of charter schools, some of the supports that districts provide to traditional public schools, and the opportunity to pilot innovations in small, new branches of a larger organization. The structure of CMOs provides the organizations with a combination of circumstances that are neither fully present in traditional district nor independent charter schools contexts. Drawing from literature on innovation and charter management organizations, I review five conditions below that potentially enable organizational learning and innovation: freedom from district regulations, hiring for "fit" and alternative human capital pipelines, functioning as part of a network that facilitates between school communication, external supports and economies of scale, and the ability to start fresh and act as an "ambidextrous organization."

Freedom from district regulations. Charter schools are frequently exempt from collective bargaining agreements and other district-level regulations such as required curriculum, fixed salary scales, procurement regulations, and length of school day (Center for Education Reform, "n.d."). In ways that are both obvious and subtle, the kinds of regulatory environment that a traditional school district creates could create a number of barriers to the adoption of instructional practice. Collective bargaining, for example, often controls many aspects of the teacher's workday, and may limit the hours in the day that a teacher would be expected to teach. Such regulations are not optimal if a new instructional practice demands long hours, especially in the early learning stages, or if the practice fundamentally alters the notion of a teachers "workday". As another example, the school district's curricular scope-and-sequence would likely not have been designed for blended learning prior to the coming of the innovation, and may not be

particularly conducive in its current form to an innovation that re-imagines curriculum and pacing structures.

While policies that free teachers and schools from such regulations do not guarantee innovation, they may be supportive of it in various ways. As schools explore and implement blended learning systems, the freedom to bypass complex district systems may facilitate quick cycles of practice, measured performance, and adjustment. Several blended learning schools associated with CMOs have capitalized on this freedom to iterate quickly as problems emerge during implementation (Bernatek, Cohen, Hanlon, & Wilka, 2012; Murphy et al., 2014). Quick learning cycles contribute to organizational learning (Senge, 1990) and therefore may assist in the successful implementation of an innovative instructional system.

By contrast, structural, political, and cultural barriers make quick learning cycles difficult in many districts. Structural barriers may include school principals' lack of control over their own budgets or curricula, preventing schools from using short-term or iterative contracts to test innovative materials (Maas & Lake, forthcoming). Political discord among board members, principals and the district office, or any of the other many players involved in districts may also act as barriers to quick adjustments to policy and practice (Cohen et al., 2014; Berends et al., 2002). Finally, cultural factors at the school and district level can contribute to districts' difficulty in implementing innovations like blended learning, which require frequent adjustments, and full commitment from everyone involved (Hazzan, 2003). New systems that propose to fundamentally alter known policies and practice will meet resistance in many schools and districts.

Independent charter schools are generally free from such constraints and some literature supports the notion that freedoms charter schools enjoy around scheduling, instructor roles and career paths, and how to spend school funds make them ideal environments for blended learning implementation (Ellison & Locke, 2014). But independent charter schools may lack the capacity to develop a new school design, support teachers in substantial instructional change, and contract with an undeveloped tech industry. New charter schools would arguably have more capacity to develop such systems than those transitioning from a more traditional model (as it may be their one and only school design), but may still be constrained by limited financial resources, as well as non-financial resources like a limited capacity during start-up years, a network of schools with a preconceived vision of what schools in their network look like, or support systems with rigid regulations around operational logistics like payroll, benefits, and contracting.

Hiring for "fit" and alternative human capital pipelines. Free from union contracts, most CMOs have more autonomy in the hiring process than unionized district schools. With these freedoms, CMOs spend significant energy to ensure that they hire individuals who will fit their organizational mission and culture by honestly communicating norms and instructional strategies to prospective hires (DeArmond et al., 2012). "Fit" with the school's culture and priorities tends to take precedence over more traditional hiring criteria, including experience and educational degrees (DeArmond et al., 2012). For example, some CMOs using blended learning strategically hire teachers who have "leadership and teamwork competencies, strong planning skills, the ability to use the technology and its data well, and the ability to deliver personalized and enriched instructions" (Hassel, Hassel, & Barrett, 2013, p. 10). To broaden the pool of applicants

and screen for mission alignment, high performing CMOs have relied heavily on nontraditional pipelines like Teach for America (DeArmond, Gross, Bowen, Demeritt, & Lake, 2012).

Because of their autonomy, CMOs are able to (and tend to) align "pay and career advancement opportunities to organizational goals" in a way that many traditional public schools do not (DeArmond, Gross, Bowen, Demeritt, & Lake, 2012). Several of the highest performing CMOs have created their own leadership pipelines, hand picking teachers from their schools to assume leadership positions. Some CMOs pay prospective leaders to take a year in which they engage in various kinds of training and leadership preparation including extensive teaching and coaching observations and the creation of a detailed school plan (Chadwick & Kowal, 2011, p. 19).[1]

This attention to hiring individuals that are best suited for work at specific schools stands in contrast to typical district systems. Districts tend to hire teachers from local labor markets and often hire for fall positions well into the summer (Beteille & Loeb, 2009). Such late hiring practices lead many applicants, often those with higher GPAs and more coursework in their teaching field than other candidates, to withdraw from the process (Levin & Quinn, 2003; Beteille & Loeb, 2009). Once hired, collective bargaining practices can make it very difficult to dismiss teachers who are not good fits for the school, which can act as a significant barrier to developing like-minded staffs (Beteille & Loeb, 2009).

Most districts also do not have a formal process for recruiting strong teacher leaders to get mentored and trained as school leaders in the school context (Myung, Loeb, & Horng, 2011). Instead, most principals come through traditional principal training

[1] These CMOs include, but are likely not limited to, KIPP, Rocketship, and YES Prep.

programs. Few, if any, of these programs or the districts they feed provide the kind of time for observation and planning provided by some CMOs, where future school leaders are sometimes paid for a year or more to observe schools and prepare their school plan (Doyle & Locke, 2014).

Although stand-alone charters have the autonomy to hire teachers based on "fit" and pay teachers based on their abilities, rather than experience, operating without a support network, the schools have very little capacity to develop training programs for either teachers or school leaders. Therefore, charter schools may enjoy some benefits in staffing that districts do not, but are unlikely to provide the support made possible by a charter school network (CMO) structure.

Part of network (between school community). The use of systems to share and manage knowledge between practitioners and groups can bring new ideas to an organization (Crossan & Apaydin, 1997). Schools in CMOs operate as part of a network in which information can easily be gathered and shared between schools. Schools within CMOs often share missions, goals, and practices, which create a common language for CMO teachers and leaders, enabling communication between schools. It is, however, possible that an existing mission, and practices transferred from established schools may interfere with the development of new, innovative processes.

District schools also enjoy such a network and many districts have recently made it a priority to develop communities of practice, in some cases bringing principals in sub-district groups together twice monthly to information share and problem solve (Honig & Rainey, 2013). However, some districts have struggled to make such communities of practice productive, especially when facilitators do not explicitly help principals to make

connections between materials and people and buffer principals from district demands that do little to further teaching and learning (Honig & Rainey, 2013). In addition, substantial variation between district schools in mission and goals may make it more challenging for district schools to find a common language than CMO schools.

External support and economies of scale. CMOs often provide administrative services such as payroll and website development, but they have also specifically supported blended learning initiatives through technology infrastructure development and engaging in negotiations with blended learning providers (Bernatek, Cohen, Hanlon, & Wilka, 2012; Murphy et al., 2014). CMOs may also be able to increase efficiency and capacity by capitalizing on economies of scale and sharing resources across schools. CMOs with several schools using the same blended learning tools are in a position to negotiate lower prices because they are buying in bulk. Technical support staff may also be able to support and share ideas between several CMO schools using similar practices.

Districts are similarly positioned to provide external supports and economies of scale. These benefits, however, have been offset by burdensome bureaucratic protocols in some district settings. For example, purchasing departments, intended to lower costs and relieve individual schools of procurement responsibilities, often have complex protocols and risk-averse cultures that can force educators to spend substantial time filling out paperwork and wait for several months for new products or services (Bailey, Owens, Schneider, VanderArk, & Waldron, 2014; Maas & Lake, 2015). District supports can also strip schools of critical autonomies. Human resource departments, for example, may relieve schools of hiring responsibilities, but may also deprive school leaders the choice of who works at their school (National Council on Teacher Quality, 2010).

In contrast to districts and CMOs, independent charter schools tend to suffer from isolation. A lack of external supports has led large numbers of charter schools to close for organizational and financial reasons—the schools simply lacked the capacity to provide students with an education and manage operational aspects of the organization (Mead & Rotherham, 2007). Innovations like blended learning demand substantial capacity on both fronts, potentially leading stand-alone charters to avoid the innovation altogether.

Ability to start fresh and act as an "ambidextrous organization.*"* Another potentially important environmental factor is a CMO's ability to start a new school (as opposed to reforming an existing school). As previously discussed, inertia and population ecology theories (Hannan & Freeman, 1984) assert that building a vision and an organization from outside of an existing system is a key mechanism for generating innovation. High performing CMOs, which tend to open new schools, as opposed to converting existing ones, appear to value their freedom to build from the ground up. With their ability to easily open new schools, CMOs can innovate by acting as "ambidextrous organizations" (O'Reilly & Tushman, 2004), which use new schools as sites to pilot new methods, while continuing to use trusted, lower-risk structures in existing schools.

CMOs' ability to pilot new ideas in new schools, rather than initiate change in schools that already operate with a traditional instructional method, may be advantageous for CMOs as they adopt blended learning. CMOs can open new schools that recruit staff and families specifically to a "blended learning school," thereby avoiding potentially difficult change processes with existing stakeholders. In this way, organizations can refine methods in flexible environments until other schools in the CMO see the value in the innovation and adopt it by request. This kind of 'need-pull' innovation structure has

been found to be more successful than 'technology-push' structures, in which the new technology is presented to implementers before they perceive a need (Zmud, 1984, p. 728).

Districts that are opening new schools also have the opportunity to function as ambidextrous organizations. But although some schools have successfully established a clear vision (Elmore & Burney, 1999), many district schools are not united by a common purpose in the way that many CMOs are. Indeed, a common challenge to reform efforts has been incoherent visions and distrust among district staff, school staff within districts, and unions (Cohen et al., 2014; Berends et al., 2002). In such a context, lessons learned in one school may not translate as easily to other settings. A high communication district with district leadership and schools that share a purpose and vision, however, may be more likely to incorporate innovate practices developed in "branch" schools into other schools in the network.

Leadership

High-quality school leadership is among the most important factors contributing to a student's academic progress (Louis, Leithwood, Wahlstrom & Anderson, 2010; Rivkin, Hanushek & Kane, 2005). Aspects of leadership, including attitude towards change, and facilitation of collaborative management are critical to enabling change in any organization (Arad et al., 1997; Damanpour, 1991), but education literature specifically notes the important role of leadership in creating a culture that welcomes change and improvement to promote organizational learning (Higgins et al., 2011; Goh et al., 2006; McCharen et al., 2011; Leithwood et al., 1998). Specifically, the articulation of

a clear vision and assistance in setting group goals, the conveyance of high expectations for the community, the provision of support, reinforcement of learning, encouragement of collaboration, and facilitation of distributed leadership are keys to leadership that facilitates organizational learning in schools (Leithwood et al., 1998; McCharen, Song & Martens, 2011; Higgins et al., 2011). These leadership characteristics influence culture but also result from strategic resource allocation decisions (how the principal uses her time, the staff time, and financial resources to provide support and shape culture).

Such leadership may be particularly necessary for the successful implementation of blended learning. Because blended learning that radically improves personalization is likely to encounter teacher resistance (Cuban, 1993), implementation is likely to be facilitated by a leader that can get teachers committed to fundamentally changing their practice and support them in the transition.

This kind of school leadership may be particularly likely in CMOs, many of which train their principals as teacher leaders and junior administrators in their existing schools (Chadwick & Kowal, 2011). Moreover, as previously mentioned, high profile CMOs are likely to attract principals that agree with their organizational objectives. Even if the principals did not anticipate implementing blended learning when they came into their leadership position, they may be particularly likely to welcome an instructional change that supports shared organizational goals.

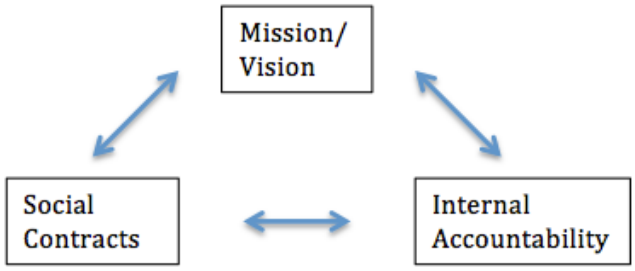
Structures and Culture for Organizational Learning in Schools

District and CMO structures, while important, have indirect impacts on the classroom. They can affect how schools are structured and how they function as

communities, which in turn has implications for what happens in classrooms, but various school-level characteristics are likely to affect classrooms more directly. Drawing from organizational learning, innovation literature, and early studies of blended learning implementation, in this section I review school-level factors that are particularly likely to impact teachers' ability to implement radical, technical innovations, such as blended learning to personalize education. These factors, considered broadly, include a clear, shared mission, strong internal accountability, and strong social contracts. While these factors are often present in CMO schools, they are neither guaranteed to be present in, nor unique to such schools. The highest performing district schools also tend to exhibit these characteristics (Edmonds, 1979; Hallinger, 2005; Purkey & Smith, 1983; Talbert, 1988).

In this section I discuss three aspects of school culture that are likely to influence how the school adopts blended learning for personalization. These thee elements, including mission and vision, internal accountability, and social contracts between students and adults, as well as teachers and administrators, do not exist in isolation, but influence one another in meaningful ways. This section discusses each of these attributes in detail, as well as how they interact with one another.

Figure 3. Framework for School-Level Organizational Characteristics Influencing Blended Learning Implementation



Clear, shared mission and goals. Education scholars have noted that a vision that is clearly articulated, commonly understood, and subscribed to by members of a school community facilitates organizational learning (Leithwood et al., 1998; Silins, Mulform, & Zarins, 2002; Goh et al., 2006; McCharen et al., 2011). Without clear, shared missions and goals, the purpose of blended learning could easily be confused, leading to inconsistent and partial implementation. Among teachers and administrators, agreement on end goals can ground conversations about process. These conversations may take the form of quick agreements about practices, but they may also potentially lead to healthy disagreement and debate about how blended learning might best be used and supported.

Clearly articulated and common goals may also be critical for a healthy student response to blended learning. If students do not share the same goals as adults in the building or if objectives are unclear, students may not understand how school-specific systems (in this case, blended learning) serve their purposes (Hill, Foster, & Gendler, 1990). However, if students, teachers and administrators all agree upon clearly articulated goals, members of the school community can use a common language to discuss how new systems do or do not assist in meeting those objectives.

Clear, shared mission and goals may be particularly likely to exist in the CMO context because charter schools are schools of choice—for students, teachers and

administrators. Unlike in many district contexts, principals almost always have full control over hiring their staff, and students and their families opt into attending the school. The structure gives school administrators and teachers the opportunity to clearly communicate the school's goals to prospective students and faculty before they choose to become part of the school community. Although surely not every student and teacher who chooses to enter a school community is a perfect fit, individuals who strongly disagree with a school's mission, vision, and practices are unlikely to stay.

Holding continuous improvement as an organizational value is sometimes incorporated into an organization's mission. Such an organizational culture, which encourages experimentation for improvement, is associated with innovation and organizational learning (Damanpour, 1991; Chandler, Keller, & Lyon, 2000, Zmud, 1984; Arad et al., 1997; Goh et al., 2006; McCharen et al., 2011; Leithwood et al., 1998). Creating such a culture would contribute to internal accountability in its effect on both collective expectations and individual responsibility (Abelmann et al., 1999). Even a small number of individuals standing in opposition to new ideas can create substantial obstacles to change in schools (Hazzan, 2003). In the case of instructional change and incorporation of technology, both of which have historically met resistance in education (Cuban, 1993), a culture of continuous improvement is especially important.

The CMO context may be particularly likely to enable high expectations and a culture of continuous improvement for some of the reasons already discussed. If the school is goal and mission-driven, organizational philosophies of high expectations and continuous improvement likely help a school achieve its goals. CMO schools are also accountable to their charter authorizing agency, the CMO, and funders, all of whom are

likely to expect cultures of high expectations and continuous improvement from the schools (Charter School Growth Fund, "n.d"). In addition, many CMOs recruit teachers and leaders from Teach for America, TNTP, and New Leaders, all of which stress cultures of high expectations and continuous improvement (Teaching as Leadership, "n.d."). If a large portion of the teaching force has been trained is these organizations, the institutions' values are likely to be present in the CMO schools in which the teachers now work.

Internal accountability. Influential work on internal accountability divides accountability within a school into three potentially overlapping categories: collective expectations, accountability mechanisms, and individual responsibility (Abelmann, Elmore, Even, Kenyon, & Marshall, 1999). Expectations are shared among individuals in a school community and "characterize the shared norms and values of school participants developed to get the work of the school done" (Abelmann et al., 1999, p. 4). Abelman et al. (1999) define the second spoke of internal accountability—accountability mechanisms, broadly construed—as "the variety of formal and informal ways by which people in schools give an account of their actions to someone in a position of formal authority inside or outside the school" (Abelmann et al., 1999). Though the school environment influences these individuals' senses of responsibility, internal accountability also come largely from their pre-existing beliefs (Elmore, 2006). Individual responsibility exists for all members of the school community—administrators, teachers, parents, students, and anyone else who interacts with the school—and plays an important role in a school's coherence (Elmore, 2006).

Although these elements of internal accountability clearly interact (community expectations and accountability systems can influence individuals' sense of personal responsibility, accountability systems and individuals' sense of personal responsibility can influence expectations, and individuals' senses of personal responsibility and existing community expectations may influence the need for accountability), they are not entirely codependent. Individuals' pre-existing beliefs, for example, influence their sense of personal responsibility independent of community expectations and accountability systems. Therefore, the three components of internal accountability can be illustrated as three circles in a Venn diagram. The extent to which the three circles overlap indicates the strength of an organization's coherence and internal accountability (Abelmann et al., 1999).

Abelmann et al. (1999) assert that schools' default state is disproportionately reliant on individual responsibility, which leads to relatively weak internal accountability. Abelmann and his co-authors refer to this state as "atomized accountability." Strong school leaders spend substantial time to align the three prongs of internal accountability. Hiring teachers who enter the school with senses of responsibility that align to the organization's values and mission, intentionally socializing members of the school community to the values and mission, and holding teachers accountable in ways that reflects the values and mission can foster coherence and strong internal accountability.

Education scholars have also noted that monitoring an organization's outcomes with clear performance benchmarks and the organizational mission and goals in mind is a key contributor to effective organizational learning and provides an accountability structure that may contribute to internal accountability (Silins, Mulform, & Zarins, 2002;

Goh et al., 2006; McCharen et al., 2011; Abelman et al., 1999). Broader literature on innovation notes that when goals are specific, difficult, and measurable, and set at the organizational and individual level, they are associated with innovation and performance (Arad, Hanson, & Schneider, 1997). Monitoring attainment has also been found to enable innovation in firms (Crossan & Apaydin, 1997).

The collection and monitoring of performance data may be particularly important to blended learning implementation because as a new innovation, educators and researchers are yet uncertain of the most effective forms of blended learning and how to best implement the innovation. Rapid innovation cycles, which some claim to be a mark of innovative thinking, in which organizations, "do, measure, and learn" necessitate the organized collection and use of various kinds of data and informally hold individuals in the organization responsible for continuous improvement (Ries, 2011). Therefore, blended learning systems may be most effectively implemented in contexts in which the use of performance data to monitor goals is ingrained in the culture (Horn & Staker, 2014).

CMOs may be particularly likely to collect and monitor data because as charter schools, CMO schools enter into performance contracts in which they agree to meet certain performance thresholds with the possible consequence of closure. It is in the best interest of charter schools to monitor data throughout the year to ensure that students are on track to meet performance benchmarks. Although district schools increasingly share this circumstance, CMOs may feel added pressure to meet performance goals because they also often lean on philanthropies to support their operations, many of which require

their grantees to collect and monitor data on outcomes (Charter School Growth Fund, "n.d.").

The CMO structure, like the district structure but unlike the stand-alone charter structure, may also provide supports for schools to extensively use and collect data. For example, economies of scale may allow a CMO school to purchase a learning management system, which may be too expensive for a stand-alone charter. CMO central office staff may also increase a school's capacity for data collection and use, either by providing school faculties with training on data analysis or by doing some of the data analysis themselves and reporting trends back to principals and teachers.

Social contracts. Social contracts, sometimes explicitly, but more commonly tacitly, outline what teachers and adults in a school agree to offer one another (Hill, Foster, & Gendler, 1990). The terms of social contracts can be set very intentionally by communicating expectations before students enroll or through systems that acculturate new students. In the case of strong high school-level student-adult social contracts, students might mutually "agree" to work hard to achieve academic goals and maintain a calm, safe environment. But social contracts can also exist by default, which generally leads to weaker contracts. Some scholars have also referred to teacher-student social contract as a "bargain" (Sedlak, Wheeler, Pullin, & Cusick, 1985). Sedlak et al. note that the terms of the default bargain are that students tacitly agree to remain passive and not create behavioral problems if adults in the building burden them with few academic demands (Sedlak, Wheeler, Pullin, & Cusick, 1985, p. 205).

Social contracts, however, also exist between school leadership and teachers. As is true between students and adults in a school community, leadership and teachers tacitly

establish terms of interaction and mutual expectations. Trust is a key component of strong social contracts, as is communication, collaboration, and distributed leadership.

Trust. High levels of trust are closely linked to social contracts, internal accountability, organizational learning and system improvement (Abelmann et al., 1999; Ertmer & Ottenbreit-Leftwich, 2010; Hennessy et al., 2005; Martins & Martins, 2002; Frank, Zhao, & Borman, 2004; Frank, Penuel, Sun, Min Kim & Singleton, 2013; Bryk & Schneider, 2002). Trust appears to penetrate nearly every aspect of schools and is associated with increased student performance and reduced teacher turnover (Bryk & Schneider, 2002; Friedman, 1991; Louis, 2006). A prominent scholar of organizational learning in schools, Karen Seashore Louis, noted:

> …under sub-optimal trust conditions, change makes school climate more difficult. Change decreases trust because it disrupts the "taken for granted" aspects of institutional functioning or is inconsistent with existing norms (Sitkin & Stickel, 1996). This finding reinforces the need for leaders to build trust in order to sustain effective change (Keedy & Allen, 1998; Mishra & Brewer, 2003). However, this may be difficult if there is limited institutional trust prior to a change initiative. (Louis, 2006, p. 9).

Communication, collaboration, and shared decision-making are all closely linked to trust in an organization and scholars frequently cluster the constructs to describe a particular culture of openness and learning. For example, one study uses the construct "trusting and collaborative climate," to describe a culture that entails: ongoing professional dialogue, active information seeking for professional improvement, mutual support among teachers, honest and candid discussions among colleagues, collaborative work, information sharing, and open communication (Silins et al., 2002, p. 618). This description, while broad, describes an environment in which trust and extensive internal communication and collaboration have a mutual and reinforcing dependence.

Because innovations in schools have historically been met with skepticism and resistance (Cuban, 1993), instructional innovations like blended learning require teachers to have faith that those leading change efforts can be trusted to keep the students' needs in view and allocate resources accordingly. One large-scale study of trust in schools found that reform initiatives have a much higher likelihood of implementation and diffusion in high trust environments (Bryk & Schneider, 2002). These high trust environments tend to be marked by strong leadership, small size, and collective decision-making among the faculty (Bryk & Schneider, 2002). Therefore, blended learning initiatives are much more likely to succeed if teachers and others responsible for implementation trust those leading and overseeing the reform.

Trust, communication, collaboration, and shared decision-making are often attributed to charter school contexts, given their tendency to develop as small intimate faculty communities, assembled by choice around an explicit mission that tends to differ from traditional public school alternatives. A high degree of internal trust is not unique to charter schools, but charter structures may provide more opportunities for high trust environments to develop than traditional school settings. Charter schools, which attract administrators, teachers, and parents based on choice, may assemble communities with trust levels that are not inherent to non-choice based placements (Bryk & Schneider, 2002). In addition, charter schools generally do not give teachers the protections embedded in collective bargaining agreements. Some scholars believe that this arrangement incentivizes schools to put more energy into fostering a high trust environment because charter schools are forced to lean heavily on trust for teacher retention (Gross, 2011).

Communication, collaboration, and distributed leadership. The importance of clear and consistent communication and collaboration is mentioned in most literature on organizational improvement, including literature from education (Frank, Zhao & Borman, 2004; Honig et al., 2010) and may support strong administrator-teacher social contracts. Internal communication and collaboration facilitates the discovery and spread of ideas (Damanpour, 1991), is associated with higher levels of trust among those in the organization, and with organizational learning and internal accountability in schools (Abelmann et al., 1999; Goh et al., 2006; McCharen et al, 2011).

In schools, communication and collaboration often takes the form of distributed leadership, which gives teachers heightened responsibility for organizational decision-making (Wahlstrom & Louis, 2008). Shared leadership in schools has been encouraged in various forms for decades and research increasingly supports the claim that shared leadership structures have a positive effect on school improvement (Wahlstrom & Lous, 2008; Spillane, Halverson, & Diamond, 2004). Teachers' participation in school-wide decisions may increase a school's collective expectations and capacity to function as a learning organization by facilitating more conversations about instructional practice and helping to reinforce a school's mission through such conversations (Abelmann et al., 1999; Pounder, 1999; Wahlstrom & Louis, 2008).

High communication organization with distributed leadership structures may be especially supportive of experimentation with new practices, especially when the innovation has implications for collaboration and interdependence among school faculty. Instructional innovation is also likely to demand expanded capacity for instructional leadership, making systems of distributed leadership especially important as support

mechanisms for personalized blended learning (Higgins et al., 2011; Goh et al., 2006; McCharen et al., 2011; Leithwood et al., 1998).

While these conditions are present in many schools in a variety of system contexts, they are particularly likely in many CMO contexts. CMO schools tend to be much smaller than traditional public schools (Furgeson et al., 2012) facilitating formal and informal communication among staff members. CMO schools also may find between-school communication to be easier than in districts, where purposes and approaches often vary widely between and within schools, because CMOs are designed to share missions, goals, and, oftentimes, instructional approaches. School cultures that encourage open-door observation policies and frequent sharing and communication about data are characteristics of many high performing CMOs (Farrell, Nayfack, Smith, Wohlstetter, & Wong, 2009).

Culture that stresses a focus on learning. The strength of social contracts between students and teachers is also critical for the adoption of new instructional methods, especially those that ask students to take responsibility for their own learning. Studies of blended learning implementation have noted the importance of setting explicit expectations for students around what blended learning classrooms should look like (Murphy et al., 2014). Especially in high schools, teacher in blended learning environments have noted new challenges associated with classroom management (Murphy et al., 2014). Although literature on organizational learning in schools does not frequently address discipline structures, effective schools literature has emphasized the importance of maintaining an orderly atmosphere and developing strong student-adult

social contracts (Edmonds, 1979, Purkey & Smith, 1983; Lezotte, 1991; Sammons et al., 1995; Hill, Foster, & Gendler, 1990).

CMOs, unlike many traditional public schools, tend to be unapologetic about their relatively narrow academic focus and mission. The schools often prioritize academic activities such as extended time in classes or afterschool tutoring (Lake et al., 2010), often at the expense of sports or other extra-curricular activities (Whitman, 2008). Families would likely protest if traditional public high schools lacked these options. But because charter schools are schools of choice, only families that agree to this structure choose to attend. Charter schools are also able to clearly articulate behavioral expectations and consequences to students and families before a student enrolls (and often do so) and allow families to make their choice about becoming part of the school community with those clear expectations in mind (Whitman, 2008; Merseth et al. 2010). Thus, high schools of choice (like charter schools) that are able to articulate their terms and allow students and families to enroll or not with those terms in mind have more control over the terms of social contracts between students and adults in the school (Hill, Foster, & Gendler, 1990).

As with clear, shared missions and goals, CMO schools may be more likely than stand-alone charter schools to develop cultures that stress strong adult-student social contracts and a focus on learning because the CMO is likely to make clear statements about their vision for these school elements and expect school communities (which choose to operate under the CMO's vision) to comply. Even if a CMO does not require all schools to follow a particular structure, it is likely to communicate a culture to its employees and prospective employees that implies the social and academic expectations

for students and how the school allocates its time. While there is no guarantee that CMOs articulate behavioral expectations in this way or that schools comply, choice systems coupled with a common purpose and cultural expectations may make the articulation of clear disciplinary standards and a school-wide focus on learning more likely. As with missions and goals, teachers and leaders who agree with the CMO's priorities are likely drawn to work at schools in the CMO, thereby reinforcing the culture.

Practice-specific Resources

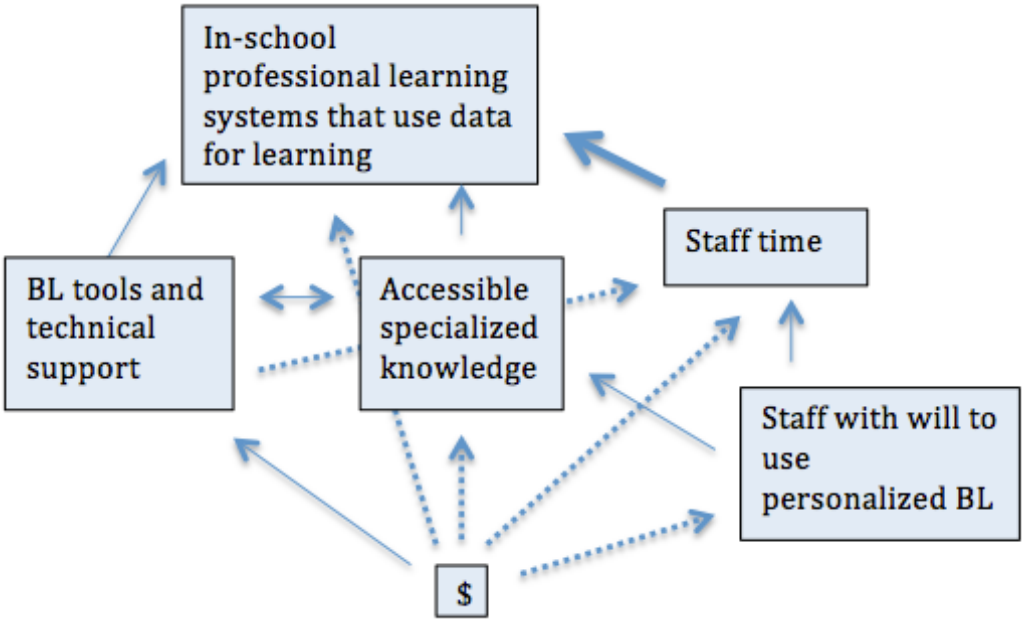
Allocation decisions in schools are equally or more predictive of outcomes than the sheer level of available resources (Roza & Swartz, 2007). Therefore, both overall funding levels and allocation decisions are likely to impact blended learning implementation. I principally examine these resource allocation decisions at the school level because school-level implementation is the focus on my study. However, to the extent that district or CMO level allocation decisions are important, I also include a discussion of these decisions. Specifically, I predict salient resource allocation decisions to be around: professional learning systems, human resources, staff time, access to specialized knowledge, access to appropriate blended learning tools and resources, and how resource availability and allocation decisions impact implementation.

These resources, however, do not work independently of one another. For example, funding levels may influence the blended learning tools and technical supports available in a school. Higher funding levels may also allow leadership to increase salaries, thus attracting more teacher applicants and giving the principal more choices when selecting teachers who she believes would be a good organizational fit.

While important to note, many of these relationships between resources are relatively theoretical and may or may not exist in the context of the broader leadership, culture, and oversight structures. For example, overall funding levels and higher salaries may not be necessary to attract staff with a will to use personalized blended learning if the school has other cultural features that may attract such staff. Other relationships related to resource allocation, however, may be stronger. For example, without freeing up staff time, it is almost impossible to have regularly occurring, embedded in-school professional learning systems to support blended learning for personalization. Figure 4 illustrates key resources and conceptual relationships between them, where the strength of the line represents the predicted strength of the relationship between resource allocations.

Figure 4. Framework for Resources

Influencing Blended Learning Implementation



Funding levels. The overall levels of funding available to a school or district/CMO clearly affect how generous organizations can be when making allocation decisions. Education and non-education literature alike finds slack, or at least adequate, resources to be a predictor of organizational innovation (Damanpour, 1991; Frank, Zhao, & Borman, 2004). Slack resources "allow an organization to afford to purchase innovations, absorb failure, bear the costs of instituting innovations, and explore new ideas in advance of an actual need" (Damanpour, 1991, p. 559). As illustrated in Figure 4, higher funding levels may allow school leaders to purchase more blended learning tools and technical supports, hire a blended learning or innovation specialist, free up staff time by hiring more teachers, have more professional development, and potentially, pay higher salaries to attract more or better teacher applicants.

However, the relationship between blended learning adoption and financial resources is a standing question. Charter schools, which have historically received less funding than traditional public schools and have often been crippled by a lack of money for facilities (Allen & Consoletti, 2008), seem to be leading the blended learning movement. But funding differs substantially by state and school. Some high performing schools have received substantial philanthropic support, which, at least when channeled through the Charter School Growth Fund, is associated with greater learning gains than comparison schools (Woodworth & Raymond, 2013). Philanthropic money may provide the slack resources that theory suggests foster innovation. However, this theory is contradicted by some evidence that CMOs' tight financial circumstance is among their reasons for moving to blended learning (Bernatek, Cohen, Hanlon, & Wilka, 2012; Horn & Maas, 2013). These contradictions necessitate more research on the link between financial circumstance and blended learning use in CMOs and districts.

Professional learning systems focused on innovative instructional practice. Studies of organizational learning in schools often focus on professional development as an important system for expanding organizational learning capacity (Silins et al. 2002), but professional development practices range substantially in quality. Duration, collective participation (by those in the same school, content area, or grade level), active participation, and coherence with other elements of the school have been found to be key elements of professional development systems (Birman, Desimone, Porter & Garet, 2000).

Further, collective participation and active participation have been found to be most effective when the professional development includes: the presence of individuals

who act as boundary spanners (between stakeholder groups), models of new actions or systems, joint work between managers and employees, social engagement that helps individuals to grapple with and understand changes, the development and use of tools to support individuals in the change process, and differentiated supports (Honig, 2012). Given these findings, we may except professional development to be most effective when it is collaborative, job-embedded, and ongoing. As such, high quality professional development systems likely demand "slack" staff time, accessible specialized knowledge, and appropriate tools and support to facilitate the professional learning.

Appropriate teaching force. Teachers are, intuitively and empirically, the most important factor in a student's academic progress (Rivkin, Hanushek, & Kane, 2005; Rockoff, 2004). This knowledge is often used to make cases for strong teacher preparation and support. But literature from education and other sectors has also found that how an individual's priorities and values match those of his or her employing organization is associated with employee satisfaction, performance, organizational coherence, and internal accountability (Cable & Judge, 1996; Newmann, King, & Rigdon, 1997; Chatman, 1991; Abelmann et al., 1999).

The notion of social contracts in schools may apply here as well. Just as students and adults in a school engage in social contracts (Hill, Foster, & Gendler, 1990), so do teachers and administrators. And just as school choice plays a powerful role in ensuring that students agree to the terms of a strong social contract with adults, choice is also critical in establishing strong social contracts among adults. Leaders' ability to set expectations for prospective teachers and teachers' ability to willfully choose to accept

those terms (or not) helps to ensure strong social contracts even before an individual begins teaching.

By an alternative framing, choice by both teacher and administrator in the hiring process helps to align two of the three elements of internal accountability: individual responsibility and collective expectations (Abelmann et al., 1999). In hiring, individual responsibility manifests in how a teacher perceives his work responsibilities and collective expectations is the school community's expectations of its teachers. Alignment, or "fit" between teachers and their schools may be particularly important in innovative environments, which require teachers to be open to new methods and experimentation. Having a mission-aligned staff that is committed to exploring innovative instructional methods may also have implications for overall staff capacity and time in that such teachers may be willing to work longer days or spend time exploring new methods outside of work hours.

Flexible staff time. Having a high quality teaching force with values that align to that of the organization is important for organizational health, but even under such conditions, teachers may struggle to experiment and find optimal innovative solutions if they do not have sufficient time. As previously mentioned, "slack" resources, which allow for experimentation, flexibility, and low-risk failure, are predictive of organizational innovation (Damanpour, 1991; Frank, Zhao, & Borman, 2004). It is important for organizations to have slack financial resources, but it is also important to have slack human resources. If teachers have no time to experiment or if they perceive experimentation to be high risk, they are unlikely to stray from their traditional practice.

Tightly stretched teacher time may also limit the regularity with which teachers are free to engage in embedded, ongoing professional learning.

Access to specialized knowledge. A recent report on the implementation of blended learning in CMOs found that, "blended learning coordinators play an important role in supporting schools' adoption of blended learning" (Murphy et al., 2014). The study found that coordinators who provided specialized knowledge (related to negotiations with software, hardware, and internet vendors, and on-site IT personnel who helped to navigate technology glitches) enabled successful blended learning implementation (Murphy et al., 2014). These individuals may provide quick answers about software or Internet connections, but they may also add capacity in a way that expands teachers' opportunities for high quality professional development. The power of having technical assistance available is supported by broader reform literature that finds that access to special expertise contributes to organizational learning (Leithwood et al., 1998).

Availability of blended learning tools and technical support. As a nascent field, blended learning tools are being developed and refined rapidly, but schools implementing blended learning continue to find that tools that meet their specific needs are not always available. For example, some teachers desire more control over what students are doing on computers than software allows or find that available software is unaligned to their curriculum (Murphy et al., 2014). In addition, schools and districts implementing blended learning have struggled when infrastructure lacks sufficient bandwidth and a powerful and reliable enough Internet connection to support blended learning systems (Murphy et al., 2014; Woodworth, Greenwald, Tyler, & Comstock, 2013). High funding levels can

easily help schools to solve connectivity or bandwidth issues and access to specialized knowledge may allow a school to build the tool that would best serve students. In addition, high quality tools and the technical supports that sometimes come in a package with online tools may facilitate teachers' professional learning.

Implementation of Blended Learning Practices In The Classroom

The factors discussed here, characterizing the immediate and more distant organizational environment, paint a rich conceptual picture of the conditions that surround the use of blended learning in charter or district school classrooms. But to complete the conceptual framework, it is necessary to discuss the various ways in which blended learning might impact instruction through interaction among teachers, students and content (City, Elmore, Fiarman, & Tietel, 2009).

The Instructional Core

The instructional core, consisting of the interaction among students, teacher, and content (City, Elmore, Fiarman, & Tietel, 2009) is centrally located in my conceptual framework because all other structures and systems exist with the purpose of supporting the end goal of student learning through the interaction of students, teachers, and content. Each of the three nodes is relevant to the implementation of blended learning, and activity in the instructional core offers the most immediate explanation for the extent and nature of this innovation's implementation.

Understanding how each site in the study originally envisioned the instructional core with blended learning in place is foundational for analyzing how CMO or district structures impact organizational learning at the school level and blended learning implementation at each site. Therefore, I present how district and school level staff described the vision for blended learning as it relates to the instructional core in Chapter 4 before profiling how each school's blended learning program impacts the instructional core in practice.

Content. Broadly construed, the "content" of instruction includes not only the subject matter under study, but also all the materials and tools that are used in the classroom. There exists a wide and growing range of blended learning tools and content (Blended Learning Universe, "n.d."). Education institutions have many hardware and software options, as well as the option to build their own tools and curricula, and their content choices clearly have implications for what teachers use and the kinds of implementation supports necessary.

Early reports on the implementation of blended learning find that software that is glitchy or does not meet student and teacher needs have been major obstacles to classroom use and that particular software features can enable or constrain implementation (Murphy et al., 2014). For example, teachers often favor software that gives them the option to assign lessons, as opposed to automatically generating lessons for students and find that software data systems that are easy to navigate and integrate are extremely important (Murphy et al., 2014).

Some programs, however, do little more than digitize content, permit students to submit assignments online, or self-pace through online research as they would when

independently reading text. Organizational institutions (CMOs, districts, and schools) would likely have to provide far less support for the successful implementation of such programs than blended learning systems that more powerfully personalize learning. The content that teachers use as part of the school's blended learning program is a critical consideration in this comparative case study. Content choices speak to both the educational institution's initial ambitions for blended learning implementation and necessary implementation supports. Therefore, how content choices relate to other constructs in my conceptual framework will be meaningful in my analysis and discussion of implementation supports.

Teacher. Teachers arguably play the largest role in implementing blended learning. Teachers determine and manage classroom routines, select and arrange lessons, and review and apply learning data. Recent work on blended learning asserts that blended learning requires teachers to shift their role. Characterized as a student-directed, teacher-facilitated model, the reports assert that most teachers will have to adjust their role (District Reform Support Network, "n.d."; Milpitas Unified School District, "n.d."). Some say that teachers will have to transition from, "sage on the stage" to "guide on the side," freeing up teacher capacity to allow for more personal and academic mentoring (Horn & Staer, 2014) while others have gotten more specific about how teachers must become researchers and developers, content curators and integrators, and data-driven student guides (TNTP, 2014).

In addition, some claim that blended learning has the power to fundamentally change the teaching profession, breaking down Lortie's "egg crate" schools (1975) to allowing teachers to work more collaboratively and have more opportunities to take on

leadership roles (Horn & Staker, 2014). In blended learning environments, some researchers assert that teaching could change in ways that allows for increased opportunities for job satisfaction through achievement, recognition, responsibility, advancement, and growth (Herzberg, 1968; Horn & Staker, 2014). Blended learning may unlock these teacher motivators by allowing the best teachers to take on more students, teachers to further specialize in their instructional and administrative responsibilities, granting teachers more opportunities to work in teams (Horn & Staker, 2014).

But how the teacher role changes is heavily dependent on the school or district's vision for blended learning. For example, a school hoping to make 50% of students' time in school self-directed using technology will require very different teacher training than a school looking to adopt a program used once per week that adjusts assigned readings to students' Lexile levels. For teachers to implement blended learning well, it is likely that they will need to have an understanding of what "blended learning" means to their school and be invested in using it to improve student learning (Hall, 2010). In addition, early research and policy reports repeatedly emphasize that technology is only a tool and that teacher quality in blended learning environments continues to be critically important (Cohen, 2013; Stewart, 2014).

Students. There are many outstanding questions about if and how students respond differently to blended learning by age, race, language needs, special education classification, and other instructional and non-cognitive needs. Some blended learning schools lean heavily on design theory, which asserts that systems are best created when they are built around the needs of the end users (Ries, 2011), which in the case of schools, is students. Leaders in the blended learning movement therefore assert that one of the

most important elements to blended learning is to design systems from the student perspective so "they feel that school aligns well with the things that matter to them" (Horn & Staker, 2014, p. 137).

Blended learning may be particularly powerful for students that enter classrooms behind grade level in that it could potentially free up time for small group instruction and allow students to receive content at their individual level, making for a more personalized, higher quality learning experience (Horn & Greenberg, "n.d"; Murphy et al., 2014). This may be particularly true at the high school level, where students experiencing academic difficulty, especially in their early years of high school, often become disengaged and are at a high risk of dropping out (Roderick, 2006). But there is yet little empirical work on this topic.

Interaction Among the Elements in the Instructional Core

Theoretical work on the instructional core asserts that instruction comprises the *interaction among* the three elements (City et al., 2010). Hence, the actual use of blended learning entails the ongoing interaction among the three nodes. So in attempting to characterize and explain the presence and forms of implementation inside classrooms, it is conceptually important to capture how students interact with the technological tools and the subject matter, how teachers understand the technology and what it is capable of, and how teacher and students relate to each other in a blended learning classroom. These interactions are likely to reflect many things—and important among them, are the organizational and environmental conditions reviewed earlier in this chapter.

The actual meaning and form that blended learning takes will be exhibited in these interactions. Therein lies the potentially "radical, technical" change that this instructional innovation represents. In this sense, the analytic work of this dissertation hinges on the capacity to show how the organizational contexts in which these practices sit shape and explain their presence in the classroom.

Chapter 3:

Study Design and Methods

Digging deeply into organizations' structures, interpersonal factors, barriers to change, and hopes underlying the implementation of an innovation requires researchers to understand how those in an organization perceive their environment and how they experience its effects on their daily work. Therefore, this study design relies on a qualitative methodology, specifically interviews and observations, to address the study's overarching questions.

The conceptual discussion in the preceding chapter allows us to identify a more specific set of sub-questions, and to link these questions and sub-questions with particular phases of the research design, which I will explain later in this chapter. I list these questions and sub-questions below. Each question is annotated with the stage of research in which the question will be explored (stage 1 and/ or 2).

In schools within CMO and district contexts,

1. *What do BL instructional practices look like inside classrooms? (2)*
    a. *What does "blended learning" mean in practice to teachers and students in the classroom?*
    b. *How do teacher, students, and content interact with each other?*
    c. *How, if at all, does the presence of the blended learning technology impact time, data use, and other features of the classroom activity? And how do time, data use, and other features of the classroom activity impact how blended learning is used?*
2. *How do these schools structure the implementation of BL? (1, 2)*

3. *What within the school (and larger oversight context) enable or constrain the implementation of BL (1, 2)*
    a. *In what ways does the CMO or district context motivate, guide, support, or inhibit the school to act as a learning organization, in general, or to productively employ instructional innovations like blended learning? (1, 2)*
    b. *In what ways do structural and cultural features of the school, or the extent to which it functions as a learning organization, influence the implementation of BL? (2)*
    c. *What practice-specific resources—including access to specialized knowledge, professional learning systems, funding levels, availability of blended learning resources, and the teaching force and their time—impact the implementation of blended learning, if at all, and how do they do so? (2)*
    d. *How does leadership interact with the classroom-level blended learning use, the presence of practice-specific resources, school culture and structures, and the CMO or district structure? (2)*

Research Design and Strategy

This research included a sequential two-stage, qualitative case study design in three schools. The first stage involves phone interviews to explore the basic context for blended learning implementation in districts and CMOs (why organizations are

implementing blended learning, what the vision for blended learning is at various organizational levels) and offer a glimpse into how some teachers and leaders think about their blended learning work. Following these phone interviews, I conducted observations at school sites, to dig deeper into details concerning how organizational features shape innovation related to blended learning. During these school visits, I also conducted post-observation interviews with teachers who I interviewed in stage one.

Figure 5 provides an overview of the study's components in a subject by data source matrix. Sample selection and research components are discussed in detail below.

Figure 5. Subject by Data Source Matrix

	Stage 1	Stage 2	
	Interviews about CMO and district environment and blended learning vision	Classroom Observations	Post-observation interview about blended learning implementation
CMO or district leader (1 per district or CMO)	X		
Administrators (1-2 per school)	X		
Target teachers (3-4 per school)	X	X	X

The findings presented here are based on data that is part of a larger investigation, which includes six schools and a survey component (I collected the data described above from six schools total). For brevity and focus, I do not include survey data, which were collected between stages 1 and 2 described above, in this dissertation's analysis.

Sample: CMO/district, School, and Participants

This section details my sampling strategies for the various subgroups in my study. I begin with a discussion of CMO or district selection, move on to discuss school selection within the CMO or districts, and end with a discussion of interview subjects, including CMO or district representatives, school administrators, and "target" teachers implementing blended learning.

CMO and District Selection

I used typical case sampling when selecting CMOs and districts, meaning that I selected organizations that "illustrate or highlight what is typical, normal, average" (Patton, 2002, p. 243). Given the wide variety of blended learning models currently in use, I anticipated finding a "typical" case to be challenging. Therefore, my only criterion when selecting a district or CMO was for the organization to have a school that meets my school-level criteria. The sample for this study includes 2 CMOs and 1 district that have adopted blended learning in at least one of their schools. I do not restrict CMO or district selection by geographic region, the organization's age, or funding streams. I intentionally allowed for diversity in the sample around these potentially important factors to gain perspective on contextual and organizational conditions that those in the organization perceive to enable or constrain blended learning implementation (Patton, 2002).

School Selection

My sample includes two schools that operate in a CMO context and one that operates in a district context. Although other contextual elements vary, examining

schools operating within CMO and district structures allowed me to probe differences in how those in the organizations perceive those management structures to enable or constrain organizational learning and innovation.

I chose to examine secondary schools because many elementary schools have a history of using stations. Therefore, some actors in the field have noted that using stations with technology may not be as radical of a change as in upper grades (Horn, Greenberg, "n.d."). To examine environments in which blended learning demanded substantial instructional shifts, I focused the study on high schools.

A selection criterion for these schools is that the schools serve a student population that is at least 50% students from low-income families. I focus on schools serving a mid to high proportion of at-risk students because of the hopes that blended learning will help to personalize and differentiate instruction in a way that is particularly valuable for students behind grade level (Horn & Greenberg, "n.d"; Murphy et al., 2014). Studying schools serving populations from low-income families also has practical importance. Casual observation suggests that schools serving at-risk populations are moving particularly quickly to implement blended learning. Many of these schools face considerable pressure to improve, a situation that may enhance their search for alternatives, including those that represent radical departures from practices that have not proven to be very effective in the past.

I use intensity sampling in school selection (Patton, 2002) in that I only studied schools that are implementing blended learning systematically. My sampling strategy could also be characterized as sampling "politically important cases" (Patton, 2002) because emerging blended learning schools are serving as models to others in the field.

Finally, I used variation sampling (Patton, 2002) when selecting schools in my sample, choosing a mix of schools operating under CMO and district structures. I included both district and CMO schools in my sample to explore how those in the schools perceive these structures to enable or constrain schools' ability to operate as learning organizations and implement blended learning systems.

The three schools I selected for the analyses presented in this dissertation contrasted with each other in the extent to which blended learning improved personalization in teaching and learning by granting students increased agency over time, place, path or pace in their learning. Such flexibilities tend to also free up teacher time and allow for more personalization through one on one or small group interactions.

One school that I select has systematized blended learning in several classrooms in ways that eliminates frontal, whole-class instruction and grants students substantial control over their pace of learning. This school also used "flex" time in a way that gave students substantial independence over their learning. Although many teachers in this school taught somewhat traditionally (many of the classrooms in this school might be considered tech-enhanced, rather than truly blended), personalized blended learning at this school coincided with a broader culture of innovation and orientation around using technology to improve efficiency and solve instructional problems.

Staff at a second school failed to embrace blended learning as a method of improving personalization through increased student agency over their time, place, path or pace of education. Rather, teachers at this school tended to use technology to post assignments and allow students to submit them online, or for students to digitally access reading. While such structures may have benefits (students may be more invested by

virtue of using technology, students may more easily access and submit assignments), this use of technology had little impact on personalization at the instructional core. A few teachers at this school offered students opportunities to access a more personalized education through allowing students to spend time on programs like Khan Academy, which allows students to access lessons at their level. But this kind of instruction was very isolated in pockets of the school and large numbers of students in these situations were academically disengaged, which puts to question whether students in these situations were actually accessing a personalized education or merely accessing free time. This weak use of blended learning for personalization coincided with an unclear school mission and weak culture of innovation and continuous improvement in the school.

A third case fell in between—blended learning that granted students agency over their time, place, path or pace of education appeared to be present in about a quarter of the classrooms in the school, but these teachers tended to use blended learning peripherally, rather than centrally, in teaching and learning. For example, blended learning was only used daily in only one classroom, where the school leadership had elected to use Rosetta Stone in lieu of a Spanish teacher who had quit. In other classrooms, teachers used programs that allowed students to self-pace about once per week. Coinciding with this use of blended learning, a spirit of innovation using technology was not embedded in the school's ethos.

Each of these cases was located in a different larger system context—the most personalized blended learning systems appearing in a small CMO, the least in a traditional public school, and the school in between in a large CMO. These substantially different contexts coincided with site selection based on personalization and, while not a

determinant of site selection, this variation suggested organizational and environmental conditions that might come to bear on the blended learning implementation within the school.

A brief summary of school attributes is provided in Figure 6.

Figure 6. Summary of School Sites

	SCMOS	LCMOS	TPS
Network structure	4 high schools in one region	10 schools (3 HS, 7 MS) in one region, >150 schools nation-wide	1 elementary, 1 middle, 1 high school in district
Community	Large urban	Large urban	Small urban
School age	9th year of operation	2nd year of operation	45th year of operation
Demographics	~67% socioeconomically disadvantaged	~81% socioeconomically disadvantaged	~67% economically disadvantaged
Enrollment	455 (grades 9-12)	340 (grades 9-10)	1,100 (grade 9-12)
Performance	2012-13 state test: 66% proficient or advanced in ELA, 56% proficient or advanced in math	No performance data yet available	2011-12 state test: 36% Proficient or advanced 11th grade reading, 32% proficient or advanced 11th grade math

Participant Selection

From the three schools in my study and their respective CMO or district central office, I interviewed one representatives from the CMO or district who has been involved in overseeing blended learning implementation or has had regular contact with the schools, one or two school-level administrators, and three to four teachers in each school. The district or CMO representatives provided initial information about the district/ CMO

context. I triangulated this information with school-level perspectives on the context. By collecting data from representatives with different roles in the organizations I was able to examine if and how perspectives on the adoption of blended learning differed across organizational levels. Triangulating data across individuals holding different positions in the organization can bolster internal validity and reveal any inconsistencies in the data that should be explored further (Miles & Huberman, 1994; Merriam, 2009).

To select representatives from the district or CMO, I interviewed the individual most directly tasked with overseeing the implementation of blended learning. I identified this individual by reviewing publically available job titles and through casual communication with individuals in the organization. In selecting "target" teachers for extended observations and interviews, I used purposeful sampling (Patton, 2002) by subject area and grade. I selected only ninth grade teachers as "focus teachers," which allowed for some consistency in student maturity level and courses taught. I selected teachers across core subject matters to allow for comparisons on this dimension, but by focusing on ninth grade teachers, most courses taught by focus teachers within a given subject area were consistent between schools (i.e. most math teachers taught algebra 1, most English teachers taught ninth grade English, etc.). When schools had more than one 9th grade teacher in a content area, I purposefully sampled by asking the principal to identify a set of teachers who ranged in their experience level. Some literature suggests that older teachers with more experience are more resistant to the adoption of new technologies (Schubert & Andersson, 2013; Hazzan, 2003), so I purposefully included teachers with a range of experience in my study. In one school (SCMOS), I selected two

ninth grade math teachers as "focus teachers" because innovative work was particularly concentrated in the math department.

A Two-Stage Data Collection Strategy

I collected data in two stages. The first stage entailed interviews with individuals in various positions in the organizations. This provided important background information about the blended learning program in use, how it came to be, and how it has been implemented. I used this information to guide my classroom observations and semi-structured interviews in the second stage of data collection.

Stage 1: Examining Design and Context for Blended Learning Implementation

Interviews with teachers, administrators, and CMO or district staff in the first stage of data collection provided a basic understanding of how those associated with the sample schools conceive of and envision blended learning, the organization's plan for implementation, and a basic understanding of the organization's culture and priorities. I used semi-structured interviews (Merriam, 2009, p. 90) to probe what individuals holding different positions within the CMO structure (teachers, administrators, and CMO or district staff) understood blended learning to be, how they used it, what they saw as blended learning's benefits, what they believed implementation challenges were, how they foresaw schools overcoming those challenges, and how they believed their school context and broader CMO or district context may enable or constrain implementation. I used semi-structured interviews to focus data collection on the specific factors outlined in

my conceptual framework, but also to grant respondents the liberty to share important information about their context or factors not previously considered (Merriam, 2009, p. 90).

Analysis of this first round of interview data provided foundational information as I moved forward in my study, but also provided evidence about organizational coherence and the degree of communication between individuals working in different positions in the CMO or district.

Stage 2: Examining and Explaining the Presence of Blended Learning in Daily Activities

After learning about original intentions behind blended learning initiatives, observations and follow-up interviews with focus teachers shed light on the nuances of daily activities and helped to answer questions about why classroom structures and activities take the form that they do (Merriam, 2009). I also observed any staff meetings or professional development activities that took place during my visit. This led me to observe a staff meeting in one of the three schools (SCMOS). In all observations, I assumed a non-participant stance to avoid interfering with staff activities or influencing decision-making.

Classroom observations helped to reveal how closely teachers' blended learning use matched organizational visions for blended learning, and helped to answer research questions about what blended learning instructional practices look like inside the classroom and how schools structure the implementation of blended learning.

Additionally, observations revealed certain implementation challenges and successes that were not communicated in initial interviews.

After each classroom observation, I conducted a semi-structured interview with focus teachers, designed to capture specific information while incorporating a structure that is loose enough for respondents to present new ideas on the topic (Merriam, 2009). My conceptual framework and information gathered from Follow-up interviews helped to answer questions that arose during my observation and probe how the CMO or district context shapes the school's ability to function as a learning organization, as well as other factors that potentially impact the teachers' use of blended learning. I initially planned to record, transcribe, and code follow-up interviews, teachers often asked to have this debrief interview in places that were not conducive to audio recording (while on lunch duty or monitoring a different teacher's class), so I relied on hand-written notes. Although collecting data in this way strayed from my initial plans, I felt that in these less formal interviews I gained a degree of honesty from teachers that I had not accessed in the first round of interviews. After a site visit, I typed these notes and included them in my data analysis.

Data Analysis Approach

In this section I will describe my methods of data analysis. Figure 7 summarizes my approach by research stage and data source.

Figure 7. Data Collection and Analysis Strategies

Stage 1

Semi-structured interviews about CMO characteristics and BL vision (CMO or district leaders, principals, and teachers, with slight variation to ask position-specific questions, qualitative)

- Created protocol, guided by conceptual framework
- Conducted interviews as outlined in this chapter
- Transcribed interviews
- Executed analytical coding (Merriam, 2009) based on conceptual framework
- Used open coding to identify any unforeseen response patterns
- Noted similarities and differences between: 1) CMOs and districts in the sample 2) respondents (CMO or district leaders, principals, teachers)

Stage 2

Observations (target teachers, qualitative)

- Created and employed observation protocol that drew on my conceptual framework of key organizational factors.
- Analytically coded observation notes key organizational elements identified in my conceptual framework and open coded for unforeseen patterns.

Semi-structured interviews about implementation (target teachers, qualitative)

- Created and employed interview protocols shaped by conceptual framework and observations
- Conducted follow-up interviews with teachers following extended observations
- Noted unforeseen themes in the data
- Analytically coded all data with codes that emerged as important during open coding

I coded all interview transcripts and observation notes analytically (Merriam, 2009) in NVivo, using the pre-determined constructs outlined in my conceptual framework. The four broad categories I used during analytical coding included: the CMO or district level, school level, resource allocation, and leadership. Within each of these broad codes, I coded by sub-construct. At the CMO or district level, analytic codes included: freedom from district regulations, hiring for "fit" and alternative human capital pipelines, functioning as part of a network that facilitates between school communication, external supports and economies of scale, the ability to start fresh and act as an "ambidextrous organization," and organizational visibility. At the school level, codes include: communication, collaboration and distributed leadership, trust, high expectations and a spirit of continuous improvement, a clear, shared mission, the use of performance data to monitor progress toward goals, and a cultural emphasis on discipline and learning.

Analytic codes related to resource decisions include: professional learning systems, human resources and staff time, access to specialized knowledge, and access to appropriate blended learning tools and resources. Finally, related to school leadership, I analytically coded the leader's attitude towards change and facilitation of staff collaboration. This approach helped to organize the data around the conceptual framework presented in chapter 2.

After organizing the data by analytic codes related to the district level, school level, resource allocation, and leadership, I open coded the data, noting unforeseen, but relevant constructs or sub-themes. This helped to reveal important patterns that arose from the data, but which my conceptual framework did not anticipate (Merriam, 2009).

After open coding my data, I reflected on the most common and relevant open codes that emerged from the data and developed analytic codes for these constructs. I then re-read the data, analytically coding with those codes. The process helped to ensure I systematically applied codes that I developed during open coding. Codes developed during this process included: original blended learning vision, perceptions of effectiveness, CMO/district capacity (in terms of staff/ time), R&D (as a district/ CMO strategy), system-level buy-in, external partnerships, evaluation systems, collective bargaining agreements/ right to work, innovation culture, continuous improvement, teacher buy-in, consistency versus autonomy, and leadership stability.

After coding, I selected three schools on which to focus my analysis and writing, based, as discussed earlier in this chapter, on the extent to which the schools personalized learning through enabling students to control the time, place, path, or pace of their education. I then memo-ed my thoughts about what claims the data from the selected

schools inspire and support. Referring to these draft claims, I looked through related codes, noting data that was both particularly supportive of and in conflict with the claim. During this process, I also noted how the data were particularly confirmatory of or oppositional to information in existing literature.

Contributions and Limitations of Study Design

This research provides a close look at organizational practices and conditions in several contrasting schools and explores how school oversight and support contexts impact organizational learning and the implementation of blended learning in classrooms. However, the research design limits the study in some ways. Because the bulk of my data came through adult interviews, as opposed to observation, this study concentrates on perceptions of organizational contexts, rather than demonstrated relevance. In addition, while focusing my data collection on adults in schools allowed me to access information about both how blended learning was being implemented in classrooms, as well as adult perceptions of how implementation interacted with the broader system, without talking to students I was limited in my ability to make claims about how blended learning impacted the instructional core from the student perspective.

Finally, I was constrained by my limited time in conducting this study and visiting the school sites. As only a single year study, this research is unable to make claims about how school contexts and cultures impact the implementation of blended learning long-term. Nor can it trace effect pathways through shifting circumstances. In addition, while spending two to three days in each school provided a decent understanding of how blended learning is typically used for instruction in the schools, I acknowledge that a few

consecutive days is a small subset of a much longer school year, during which many factors influence instruction. It is possible that some randomness in what I observed have impacted my findings.

Chapter 4

Portraits of Blended Learning in Three Contrasting School Sites

In this chapter, I present three contrasting cases of blended learning implementation in schools that have explicitly focused on integrating this technology into instructional practice. The cases fall along a continuum, from one that has fully integrated blended learning into daily practice, school structures, and school culture, to one in which the school's official embrace of the technology failed to develop deep roots into practice, school structure, and culture. I present each case in parallel format. I begin by describing the way the technology is manifested in the instructional core, paying particular attention to the instructional model, the use of data, and flex time. I then describe the salient cultural and structural (e. g., concerning staffing, training, and support) features of the school. Finally, I provide analysis of the way these cultural and structural features relate to the patterns of blended learning in the instructional core. I close the chapter with a discussion of the contrast among cases.

Small CMO School (SCMOS) Case: Deep Integration into School Structure and Practice

For the last four years, SCMOS has leveraged e-rate and private donations to bring technology to the school. In the fall of 2012, an English teacher got a cart of Chromebooks for her class, prompting several other teachers to ask for carts of their own. By the end of the 2012-13 school year, the ninth grade was sharing a cart and experimenting with different ways to use the technology and by the fall of 2014, the

school had purchased enough Chromebooks to administer one to every student (Chromebooks are checked out each day in the morning and returned in the evening).

The school, located in California, faces very low per pupil funding. These funding levels have been one impetus for change. The principal reflects:

> knowing that California funding is not sustainable, we can't keep the same kind of teacher-student ratio… So, a lot of teachers know, like are gaining awareness that part of the reason why we are trying to innovate is because we need to be thinking about the roles of teacher, student, time and space to make sure that we are economically sustainable.

Although no singular goal or problem drives SCMOS' work with technology, there is consensus around the belief that technology can help prepare students for college by helping to more efficiently use teacher and student time. The superintendent of SCMOS stated,

> the driving force is we have kids coming into high school many years below grade level and we want them to graduate college-ready four years later. And [technology use] is a huge acceleration. They come in and their gaps are all different. So managing that is our first driving force that led us to- how can we just work smarter?

Similarly, the principal said,

> We have been really pushing our thinking on how we can make sure the teachers are using their time on the most important things. And the things that really only a human can do, and then try and find opportunities where the students can learn independently or learn collaboratively without an adult, or without the teacher. Because I feel like ultimately that's how they are going to learn in college. They are going to learn a lot from watching videos of their lectures or reading textbooks or working in study groups.

Echoing their leaders' belief that technology has the power to help to prepare students for college by more efficiently using teachers as resources, teachers tended to talk about how they believe the extensive use of technology helps makes their jobs easier and how it positively impacts teaching and learning. One teacher stated,

> [Google docs] makes writing so much easier to teach and so much easier to assess, because a student's writing can be everywhere at once. When we were dealing with essays on paper, it would be like, they can have their essay and they gave it to me, and then I had the essay. Then I gave it to them, and then they have the essay. It was this back and forth thing. Now everything is very convenient.

A different teacher said,

> the load is less heavy on the type of planning that like I'm used to in a traditional class and more about looking at data and figuring out how I'm going to intervene with my students and who I'm gonna to pull for small group instruction the next day.

Yet another said, "teaching 35 kids (whose skill levels are) all over the map… I feel—I don't know how people did it before—it feels like it can only be accomplished with technology."

SCMOS does not use a set "blended learning" model. Rather, the superintendent of SCMOS described the spread of innovation as "demand pull." She said, "Our whole approach is collaboration. It's a viral kind of adoption and integration and then sharing and integration into our site and network through professional development." Teachers are expected to consider how technology might help solve problems of practice, but the school and district rarely impose any particular solution or set of solutions on teachers.

Blended Learning in the Instructional Core of SCMOS

The use of blended learning to personalize instruction varied by classroom in SCMOS, but was systematically integrated in various school structures and classrooms, such as flex time and several math classes. In those math classrooms, students controlled the pace of their learning in various ways while working independently on computers. In some cases students navigated a full course at their own pace, taking assessments and progressing to the next topic only when they felt that they had mastered the necessary

skills. In other cases, students progressed through a course at similar rates, but received direct instruction through videos, which students could pause, rewind, or watch multiple times.

Personalization through blended learning at SCMOS also exists during the school's flex period, which some students have for multiple periods a day and during which students use their time as they feel appropriate to advance their learning. As I will discuss in greater detail later in this section, students may choose to use this time to in a number of ways. Some students I observed during their flex period accessed course instruction through videos or online modules, others accessed and worked on online assignments, and others received tutoring from their peers or worked collaboratively.

However, not all classrooms in the school use technology to grant students equal levels of control over the time, place, path, or pace of their education. Although almost all teachers in the school use free resources to make assessment and communication more efficient, many classrooms in the school look relatively traditional. Students commonly use pencil and paper worksheets or packets to take notes and practice, and teachers often use frontal teaching for at least part of the class period.

Teachers in more traditional classrooms sometimes use videos, which students could watch independently and pause or rewind, but overall are far less personalized than the math or flex periods that granted students control over the place and pace of their learning. Teachers using more traditional methods at SCMOS do, however, regularly (daily or almost daily) use free online tools to improve efficiencies in the classroom. One regularly used program, "Exit Ticket," allows teachers to immediately view formative assessment data in multiple ways. Teachers may ask students to enter responses to a

beginning or end of class mini-assessment into Exit Ticket, which allows the teacher to view real-time data and modify instruction to focus on topics that many students do not understand. Teachers also regularly use Google Docs and Google Sheets to communicate with students and allow them to review and comment on each others' work.

Incubated innovation in the math department. Two math classrooms in the school use technology very differently than other teachers in the school. In one class, designed for math remediation, the teacher never gives full-class direct instruction. Instead, a Google spreadsheet with links to all course content directs students to lessons that they work through at their own pace. (A former SCMOS math teacher created this spreadsheet.) Students meet regularly in small groups or one on one with the teacher to check in on progress, set goals, and get tutoring on concepts that they find particularly challenging. Students can repeat practice as many times as they feel they need to and sign up for assessments when they feel ready to succeed.

In algebra I, a large classroom is divided (without physical barriers) into three sections. At the direct instruction, or "learn it," station, students wear headphones and take notes from a video they watch on the computer (the video is often a recording of the classroom teacher's hand, which she created with a document camera). At critical moments, the online lecture is spliced with short practice exercises or games. At a second station (discuss it), students are in a small group with the teacher, who leads a discussion of what the group learned from direct instruction the previous day. In addition to discussing the lesson, students work through a practice problem or two that asks them to apply the basic knowledge that they learned the previous day. At the third station (apply it), students work collaboratively on multi-step problems related to the lesson.

Upperclassmen "student interns" are available to answer questions and help the teacher with other small tasks during this time. Students in collaborative groups have specific roles and students working in "collaborative" reflect on how the group worked together at the end of each period.

Flex time. As previously mentioned, flex block is students' time to work on what they need to get done—some students work on homework, some work on projects, some watch videos that their teachers have made. One student I observed used this time to edit a video clip of himself playing basketball to send to a college recruiter. I observed very few students who were not being productive (the two students I saw watching YouTube or doing something similar only did so for very short periods of time). Other students watched instructional videos, worked independently or collaboratively on course assignments, or did both, referencing the video for information as they completed their work. For 9th and 10th graders, "flex" takes place in a classroom. 11th and 12th grade students have flex in a newly built space, which has couches, high coffee-shop style tables and stools. A student "design team," which is an extra curricular in which students use design thinking to solve problems in the school, played a role in envisioning flex period. Some students, particularly upperclassmen, may have multiple flex periods on a given day.

Salient Cultural and Structural Features of SCMOS

The school exudes a culture of innovation. Although not every teacher is using technology to fundamentally alter the structure of their classroom and personalize instruction, the school administration has established a culture in which teachers believe

that they are expected to think differently about how to use resources, including their own time and energy. The administration understands and communicates to the staff that not all new ideas will work. Given the expectation to innovate and the administration's tolerance for failed trials, from a teacher's perspective, maintaining status quo teaching in the face of an instructional problem is riskier than experimenting with solutions.

A culture of innovation. Through interviews and observations, SCMOS' culture of innovation was consistently palpable. As one teacher reflected, "there is a sense that teachers will be innovators" and another said, teachers are responsible "to keep trying new things." Even teachers who use a relatively traditional classroom structure tend to use technology to reinforce or provide alternatives to their traditional lesson (they may direct students to videos that provide important content or sites where they can practice critical skills). Teachers and administrators work together regularly and administrators note that technology is a key tool to which they turn to collaboratively solve problems.

High and common expectations. Even in more traditionally structured classrooms, there are clear expectations for how students use technology. At the beginning of the year, students and parents sign contracts that outline what the school's expectations are related to Chromebook use and care. The school also has clear protocols, norms, and consequence systems related to technology use.

The results of these structures are visible in classrooms. Adults use similar language to communicate expectations. For example, teachers commonly tell students to put their computers at "30 degrees," when they are not in use. Students rarely navigate away from the sites they are supposed to be using and when they do, they are almost always checking their grades and assignments. Expectations related to phone use are also

common across the school—phones should not be seen or heard during class or when an adult is talking (and generally are not). A phone rang during a freshman class meeting and the mood in the room abruptly changed from warm and calm to tense. The assistant principal got stern and said, "let me hear a phone again. It's about to get ugly in here," before returning seamlessly to what he was talking about and his previous tone.

Setting clear expectations around technology use is representative of the school's broader intentionality about building a focused, college-going culture. To help build this broader culture, the ninth graders go on a multiple night retreat to a college campus before the start of the school year, which one teacher describes as, "[SCMOS'] way of indoctrinating students to the way that we are as a school." Teachers spend quite a bit of time at the beginning of the year teaching and practicing procedures and adults in the school reiterate expectations regularly throughout the year. A different teacher, when discussing school culture, said,

> We spend so much time and effort. I mean, there are signs everywhere that talk about how effort is the most important part of success. We have weekly meetings where we're always going over growth mindset. We have signs in every classroom. We're having students constantly reflecting on their learning growth and effort. It just goes on all the time.

Staffing for innovation. The school administration is intentional about hiring teachers who, "(believe) that every student deserves to be treated like a college student and believe that they have the ability to make a student work harder than they want to work when they start." Candidates understand the school's focus. One teacher recalls applying to SCMOS because of its "college-going mission" and its "focus on serving disadvantaged or under-served populations." The school also hires for growth mindset and "orientation to being a learner." Technological know-how is considered a nice-to-

have, but is not a requirement to get hired. Instead, the administration looks for openness to learning new things. If a teacher is open to learning, the principal said, "there's enough [tech-savviness] here that people learn it even if they come in as like a technophobe." The teaching staff is not unionized and skews young, but the school stopped hiring first-year Teach for America teachers a few years ago and very few teachers are fresh out of college.

Teacher turnover is about 25% per year, most of which is voluntary. The administration has only decided not to renew one teacher's contract in the last three years, but has created high stakes improvement plans for several teachers and openly engaged in conversations with them about what the school expectations are and whether or not the school is a good fit for them. One teacher noted that if teachers are not willing to collaborate, reflect on, and adjust their practice, they are not likely to stay at the school. The teacher said, "the teachers that stick around are the teachers that are innovators."

Staff training and support structures. Each teacher in this school has a coach who observes the teacher's practice at least once per week. The coach then has a meeting with the teacher to discuss instruction every two weeks (if the teacher is a first year teacher, they meet with their coach every week). Teachers and administrators communicate through Google forms to personalize and monitor coaching and sometimes, to get real-time feedback on their teaching.

When the school went to 1:1 Chromebooks at the beginning of the school year, one math teacher took on administrative responsibilities as the "innovation coordinator." This part-time teacher, part-time administrator's role is to support other teachers in their technology integration. This innovation coordinator uses her "admin periods" to do

anything from writing the school's contracts and protocols for Chromebook use to searching for technical answers to teachers' questions about the capabilities of certain tools.

In addition to support that teachers receive one-on-one from their coaches and the innovation coordinator, the school ends early for professional development every Wednesday afternoon. Depending on the school needs in a given week, the staff may break into grade level teams, departments, or work for the full two to two and a half hour time block as a full staff.

Communication and collaboration. A hallmark of the school is the large amount of feedback and data that teachers, administrators, and students use to reflect on and adjust practice. Every week at the end of school-wide professional development, teachers share what they found to be most and least effective about the session. The innovation coordinator also regularly uses short surveys to ask teachers if there are specific tech-related issues with which they need help.

Students' perspectives are also important to the school's staff. When I visited, the ninth grade science teacher administered a survey to students during class to learn about how students budget and use their time. At professional development that day, teachers dug into these survey data to see what students were doing well, what they were doing poorly, and to think about how they could help students to become more efficient.

How the Instructional Core Relates to the Cultural and Structural Features at SCMOS

In this school, a focus on using teacher time efficiently leads to more student-directed learning. In line with stated goals, extensive technology use has reallocated resources in a way that pushes some work previously done by teachers down to students. In effect, learning has become more student-centered and student directed. The math support class, in which students must self-navigate through a curriculum, provides one example. Another example comes from an English teacher, who is working to develop a crowd source grading platform, which has students grade one another according to a rubric. This tool forces students to deeply engage with the rubric by which their own work is assessed, and dramatically cuts down on teacher grading.

Teachers also commonly push students to seek answers to their questions through online searches before asking the teacher. For example, teachers commonly say things like, "I don't know, use your resources" when a student asks questions whose answers can easily be found online. Such a response both saves the teacher time and creates the expectation that students will self-direct and independently problem solve as much as possible.

Communication and trust among SCMOS staff helps good ideas to spread organically. Once a teacher adopts something new, the integration of that tool tends to mature for a period in that teacher's classroom. Then, when the teacher becomes comfortable with a tool and believes that it is improving efficiency in his or her classroom, the teacher may present the tool to the staff. Or, other teachers may learn about the tool through word of mouth or observation and integrate it into their practice, using it as works best in their own classroom. One teacher recalled that when she first got access to Chromebooks,

> I looked a lot at the way [a teacher who had a Chrome cart before others] had set up her stuff and just emulated what she had done. Then after setting it up the same way as her, then I started going in my own direction. Now I think what she and I do, I think there's overlap, but there's differences, based on what we found works best for us, just preferences.

Comparing her experience at SCMOS to stories she's heard about other schools implementing technology, the same teacher said,

> In our school, I think there's more of a collaborative, more maybe organic culture with how everything is happening. Um, and it's not as much about an individual person who is the most creative with technology. It's more just shared ideas.

The combination of frequently sharing ideas and the freedom to adopt (or not) tools as teachers deem best contributes to trust and respect among adults at LPS. An administrator noted, "there's a lot of trust that goes into it (electing to use or not use specific tools). You figure out if that's your thing, if that's too much for you or not." The administration's open dialogue with and trust for teachers, as well as its reluctance to push broad-stroke policies appears to generate a reciprocal respect for the administration. Teachers openly engage in meaningful conversations with their managers to solve acknowledged problems or practice.

Large CMO School (LCMOS) Case: Unprioritized Integration into School Structure and Practice

As this school was being established, the regional LCMOS office worked with the principal to secure grants for technology and blended learning and the school leader incorporated blended learning into her school start-up plan. The school leader noted that, although she appreciates the potential power of technology, funding available through

technology-specific grants was a strong incentive to move towards blended learning. Located in California, the school operates in a very tight funding environment and the principal recalled, "this was a relatively easy way to get a lot of money…when I look at my budget sometimes, it's like ridiculous because I have so much money to spend on tech stuff and then kind of nothing to spend on anything else."

A few years ago the LCMOS regional office that works with this school began to explore how blended learning could positively impact students in the network. The network explored blended learning as a way to 1) improve teacher sustainability and support, 2) increase the amount of quality time that a teacher can spend with her students, and 3) realize cost efficiencies. Over time, the CMO has realized that blended learning has not reduced costs, but the organization continues to think about blended as a way that students can, "have higher quality, more personalized or differentiated time with a really good teacher."

Personalization, however, does not always ground conversations about blended learning at the school level. When discussing the goals and benefits of blended learning, one teacher mentioned that kids can access articles that are at their reading level, but focused on how using computers improves student investment by making kids feel like their work is "official." She noted, "I think that it does create a more professional, like legitimate environment that there is computer use a lot." A different teacher noted that some available online services may help with personalization, but focused on how computers build technology savviness that students will require in college. He said, "If we're going to prepare kids for college, we've got to do this because they're going to need to know how to do this stuff." Two other teachers noted that the information

provided through online information systems is helpful for grounding conversations with students and their families in data. Teachers find that having access to data about student assignments, grades, merits, and demerits from all of a student's classes can help guide conversations with students in their advisories or during parent meetings.

Blended Learning in the Instructional Core of LCMOS

Each teacher in the school has a class set of Chromebooks. In grant applications and in an interview with a news source, the principal has described the school as using a three-station rotation model, but when I spoke with her, she remarked, "model is a strong word for what we have." Teachers have substantial flexibility in how they use computers and the school leader believes that this teacher autonomy has resulted in many creative Chromebook uses.

Teachers agree that the school doesn't use one particular blended learning model. No teachers in the school use station rotations with any regularity, but some classrooms occasionally use programs, such as Achieve 3000 or Khan Academy, with their full class that personalize education by granting students control over the pace of their learning. These programs administer students diagnostic assessments and assigns students practice that addresses knowledge gaps identified by the online assessment or the teacher. While personalized, these programs sat on the periphery of the instructional programs in the math and English courses in which they were used.

The school also used Rosetta Stone, an online language learning program that students navigate at their own pace (although they must reach certain checkpoints by the end of the week). This instruction appeared to indeed be personalized, but was in its first

week of use when I visited the school, making it difficult to make claims about how this course integrated into or impacted the broader school or instructional culture.

In addition, teachers report using myriad other online tools on occasion. Most of these tools sit on the periphery of courses and while they improve efficiency in the classroom, they do little to grant students control over the time, place, path or pace of their learning. Teachers reported using Exit Ticket for real-time assessment, Google Docs and Sheets for quick communication and document sharing, NoRedInk to assess and track students' grammar skills and needs, Quizlet for student-led practice and assessment, Desmos.com for interactive calculator assignments, educational videos on YouTube, and EdPuzzle for editing and inserting practice questions into pre-made or teacher-made videos. One teacher reflected that there is, "a lot of good stuff happening, but without much like order, or without much like intention."

In-class use of the learning technology is diverse and inconsistent in this school. Although many teachers in the school use software and online tools from time to time, teachers use these tools inconsistently—technology in the school is used more as one of many tools in a toolbox than an integral tool for daily teaching and learning. When I observed one classroom, a teacher said, "oh good! I'm actually using technology today!" During the two days of classrooms observations, three of the four 'target' teachers made use of the Chomebooks in their classrooms in some way.[2]

In an English class, students used Chromebooks to complete warm ups in Google docs and the teacher projected anonymous student responses at the front of the class to guide the class's conversation. The teacher then used example paragraphs from essays

[2] I asked target teachers not to change their lesson plans for my observation, but chose to conduct classroom observations on the day and time when a teacher planned to use the most technology during my two day visit.

that students had submitted electronically to guide students through strong and weak aspects of their writing—she reviewed a printed copy of this text on the doc cam and also handed out hard copies to students. Although the teacher did not use software to provide students with differentiated reading instruction during my observation, she reported to do so (using Achieve 3000) at least once per week and has a poster tracking students' scores displayed in her classroom.

In a science class, after students completed a warm up on pen and paper and watched a video as a full class, they completed interactive vocabulary practice using the online tool, "Quizlet," which students navigate at their own pace. At the end of class, students completed a formative assessment using the program "Exit Ticket" and the teacher projected real-time assessment data aggregated at the class-level on the Smartboard (although neither he nor the students referred to it). Students in Spanish classes wore headsets with earphones and speakers and worked through Rosetta Stone modules. Students moved through lessons at their own pace during class, but were responsible for completing a certain number of lessons by the end of the week (if students did not finish the modules in class, they would have to complete them afterschool or at home).

Other teachers used Chromebooks less intensively. In one social studies class, students used the Chromebooks to search the Internet for facts and images as they worked in groups to create a PowerPoint. A math teacher reported using Khan Academy, during which students worked through problems at their own level and pace, about once per week, but did not use Chromebooks during my observation.

Data use. The principal noted that blended learning, "can give teachers data faster, so it does save teachers a little bit of time that way" and as previously mentioned, teachers find it helpful to have a school-wide system in which they can see each others' data. However, teachers use blended learning data in their own classrooms to varying degrees. Some teachers track data from Achieve 3000 or Khan Academy on posters, which they report helps motivate students. But beyond public tracking, many teachers do not know how to best use their data. One teacher observed, "A lot of teachers are not frequently collecting data and analyzing it to see if it's actually having an impact. Like, it's happening pretty haphazardly" and another said,

> My biggest challenge is knowing what to do with the information I've gathered via technology. Like, I already knew that my kids struggled with this, and I see that they're still struggling… like what am I trying to gain from this new information?

Flex time. The school has an advisory that meets four times per week. The principal and founding staff original envisioned this time to be used as a flex period in which students would use technology for remediation or advancement—"a pseudo RTI (Response to Intervention) period." But scheduling difficulties and other priorities interfered with the creation of such a period. The principal said,

> Just like logistically that's been really complicated to do, so we didn't do it last year and we haven't done it yet this year… that is a thing that I thought was gonna be like a hallmark of my school that hasn't come to be yet.

Most teachers report checking in with students on their grades at least once per week during this time and report that the time is also used to deliver announcements, hand out progress reports, deliver lessons planned by the counseling staff, or for students

to complete surveys. However, during my observations, advisory looked like free time for students—most students used this time to relax with their friends and some used it finish homework.

Salient Cultural and Structural Features of LCMOS

This school exhibits a mission-driven ethos and clearly envisioned values. The school consistently communicates its mission to get its students to and through college. College banners hang throughout the school, murals illustrate the climb to college, and students all take a college counseling class, in which they discuss the college application process and how to make themselves a good applicant. Teachers also frequently reference college preparation in class. For example, when one math teacher said, "why are these warm ups getting harder?" several students responded, "to get us ready for the ACT."

The school also has clearly stated (if not always acknowledged and realized) values. Posters acknowledging the school values of joy, community, grit, and excellence hang in every classroom. However, in my time at the school, I did not observe anyone referencing these values.

"Hyper-focus on behavior." The envisioned school culture is not coming easily. There was a clear antagonism in the school between adults and students at the time of my visit—teachers used quite a bit of class time correcting student behavior and telling students to take off their coats and backpacks, sit up, and track the speaker with their eyes. It was common to enter a classroom and hear a teacher, discussing mid-term test scores, say something like, "What is contributing to you not learning is all the playing around." In one class I observed, an administrator sat in the back of the classroom and loudly

informed the teacher of students' infractions, saying things like "one student wearing a backpack, two have hoods up," and "one student still wearing backpack, one student tapping (a pencil)."

Nearly every adult with whom I spoke noted that the school staff's current focus is school culture. One reflected, "right now it feels very teacher versus student." Some teachers pointed to the school's merit and demerit system as one possible culprit for the animosity. One teacher said,

> You can earn a demerit for pretty much anything and 4 demerits equals detention. And kids don't really respond to the demerits. It doesn't really help correct behavior, if anything it makes behavior worse… it's been a challenge.

One administrator thought that demerits work for about 80% of the students, but for others she said, "It's like hitting them over and over again with paintballs."

The "teacher versus student" feeling clearly affects how students interact with adults in the building, but it also affects adults' orientation to their work. Many teachers noted how they were feeling "worn down." One said, "I think, like, at the beginning of the school year before kids came we were very much on mission and we knew like why we were here. It feels like lately that it's more about survival." A different teacher noted how the relentless discussions about student conduct made school unpleasant for the whole community. He said,

> I think there is just a hyper-focus right now on behavior. Merits an demerits, that's like not fun, right?...I think teachers are just frustrated and overwhelmed. They want to be teaching. It's just like I think that there is a low morale. They are just bored and they don't want to always be talking about 100%, 100% tracking, silent, and those kinds of things.

Respect and trust among adults. Despite commonly expressed frustrations related to school culture, every teacher with whom I spoke at the school expressed

respect for their peers' commitment to the school and students. One teacher noted that, "everyone busts their butts," another said, "I think everyone comes to school and works super hard each day," and a third said, "people are incredibly supportive of one another…there's rarely, if ever, tangible or visible animosity between teachers. There's this sense of performance orientation. It's a solid, super supportive environment."

Some teachers noted that these warm feelings do not always extend to the administration, which sometimes makes school-wide decisions without consulting the staff. But even when expressing frustration over this point, teachers tended to quickly qualify that frustrations come in the context of an adult culture that is overall, trusting and focused on the same goals. For example, a teacher who said that teachers are sometimes "disappointed when [decisions] are just presented as they are without (teachers) really having any say in it" also said, "but I think most people have really strong relationships with their manager." After noting frustration about a recent school decision, a different teacher said, "and I know that [the principal] or any manager would never ask me to do something that they wouldn't do themselves. There's I think a lot of trust amongst adults."

Staffing to support the school mission. The school principal hires staff, in large part, for mission-alignment and growth mindset. In part to screen for this mission-alignment, she hired many Teach for America alumni who were previously teaching at high performing charter schools. She noted that she tried to hire people who had open minds about technology or had used it before, but didn't make it a criterion to be hired. The majority of the staff is under 30 years old—one teacher described the staff as "young and active," and only a few teachers have children.

Of the twelve founding staff members, eleven returned in the school's second year (the teacher who left did so because her husband got a job elsewhere). However, in the second year, the school lost two teachers mid-year.

Staff training and support structures. LCMOS' philosophy is to give school leaders, "power to lead," meaning that although the regional office may make recommendations, it gives school leaders full autonomy over school-level decisions. As such, the regional office has not prescribed a particular blended learning model or required teachers to partake in any blended learning training. The regional office has an Innovation Manager, who noted that school leaders sometimes discuss what they are doing around blended learning for 20-30 minutes at monthly school leader meetings, but that blended has not generally been a primary focus of those meetings. Instead, the network has leaned heavily on school-level "innovation specialists" to work with and support teachers. Some schools in the region have elected to make the "innovation specialist" role a part-time or full time position, but this individual is a full-time teacher at the profiled school. The innovation specialists in the region meets monthly and have a close working relationship with the Innovation Manager at the regional office.

Teachers noted that it is helpful to have someone in the school to go to with tech problems. One recalled,

> I was having Internet trouble in my room for like a week or 2 and [the innovation specialist] did everything. I just told him I was having a problem. He like sent out a survey and I said, "my internet sucks" and then he got on that and like emailed the people in the regional area. And then I had people from the region out and like checking the next day.

However, the specialist noted that because he has so many other teaching responsibilities, the time he allocates to his role as the innovation specialist is limited. He said,

> A lot of teachers frequently talk to me for both big and small questions. And so I feel like them knowing that at least they have somebody who is a potential resource, and a very easy person to just pinpoint and quickly email, has enabled a lot of teachers to hop on board (with blended) in just really small ways…but, unfortunately it's just really hard to dedicate, ya know, a lot of time to that… most of the stuff that I do in terms of like building little different tools to use, all that happens kind of just after hours.

Besides assistance from the instructional innovation specialist, there is very little professional development at the school level that directly focuses on blended learning.

How the Instructional Core Relates to the Cultural and Structural Features of the LCMOS School

In this school, *an opaque vision related to technology use leads blended learning to sit on the periphery of the school's identity***.** Although LCMOS was established as a "blended learning" school two years ago, adults in the school rarely, if ever, discuss blended learning goals and visions. While the innovation manager noted that he sometimes has time to present at staff meetings and writes a blurb in the weekly newsletter, blended learning is not a key focus in conversations about school identity or improvement. As a result, teachers do not fully understand what "blended learning" is or what it might look like in classrooms. One teacher said,

> I don't know if I actually have a blended classroom. I think that I have a classroom and I sometimes use tech. And so I don't think that we as a school have like a very clear sense of like what this action means to be blended. What do you actually have to do in your classroom to be "blended"?

Another posited that in the chaos of starting a new school, the school leader never really developed a clear vision of what blended learning might look like. He said,

> I think [the principal], when she originally applied for these grants and wrote it into her school as a personalized learning experience model, there wasn't ... like, It's not her fault, she was thinking about a billion things, but I don't think there was a really clear vision for like what that looked like. We have a one to one Chromebook ratio, but I don't think she had substantial experience in that... So I think it was an adoption of this great tool, but not really, again, a vision, or a focus, or any goals set around teacher use. It was really kind of empty.

A different teacher also noted the lack of clarity around what blended learning is and posited that the ambiguity might be traced back to lack of vision at the regional office. She said,

> I feel like the [regional and national teams are] trying to figure out like how are we going to use technology. Like what would we ideally want to see come out? And I think because they haven't really given me an answer to that it's difficult for me to feel, like, really strongly about using technology. I mean, I can see the benefits absolutely but I don't really know what it looks like in an ideal classroom setting and I haven't really seen it modeled super super well.

Limited capacity, driven by a focus on getting students to meet behavioral and academic expectations, crowds out innovation as a priority in LCMOS. As previously mentioned, the school community is very focused on establishing an orderly culture in which 100% of students are meeting school expectations and doing what the teacher asks. Teachers noted that much of their professional development and staff time has gone to discussions about student culture, as well as staff morale, while very little has gone to innovation or technology-enabled problem solving.

The school is using a combination of punitive measures and supports (which some students may perceive as punitive) to get students to meet academic and behavioral expectations. When students are disruptive or disobedient, teachers and administrators

hand out demerits, four of which earn a student detention.[3] The school also has an afterschool tutorial session, which students failing one or more classes are required to attend. Homework center is also held afterschool and is required of students who did not finish their homework that day.

These structures consume large amounts of adult time and capacity in the school, leaving little to no energy for the staff to focus on blended learning or innovation. In the school, time is palpably scarce. Catching teachers for twenty-minute post-observation interviews was difficult unless I followed them to a class that they were covering or some other school duty. In line with this feeling of stretched capacity, the school leader chose not to make the school-based innovation manager a full or part-time position because she felt that she "needed those resources elsewhere." As a result, that innovation manager could do very little. He noted:

> Unfortunately, despite the title that I have, I am also teaching five periods a day... I would love if I was doing part-time of each (teaching and acting as the innovation manager) and I had more time to get into teacher's classrooms, and really empower them, and give them feedback, and do some coaching, and whatnot. But that just isn't happening. Like I'm not doing it and I'm very confident that the majority of the coaching that's happening between teachers and managers is not regarding the fidelity of the use of the Chromebooks, and kind of the effectiveness of various blended learning techniques. I would be very surprised if that were in most or any of the conversations between managers, [the principal], and teachers.

The lack of capacity for professional development and coaching around technology has resulted in teachers using technology when it seems obvious to do so and demands little time. But the staff does not generally see technology as a go-to tool for solving instructional problems. Limited capacity has also pushed the school leader and

[3] Adults in the school also hand out merits, which earn students lunch or coffee with a teacher, but earning merits does not appear to be a particularly motivating force among students.

innovation manager's vision of an RTI "flex" block back to an unknown time. One teacher noted that despite initial visions of founding a school with a "very progressive model of blended learning," he feels like priorities have shifted and that the leadership team reverted back to founding a traditional school, with hopes to infuse blended learning into it later.

Traditional Public School (TPS) Case: Grant-supported Innovation Without Deep Roots

TPS launched blended learning two years ago at the same time that it was undergoing a $40 million renovation, part of which involved upgrading the district's bandwidth and technology infrastructure to accommodate a high-tech environment. The school was also the recipient of a Pennsylvania Blended Learning grant and a federal School Improvement Grant (SIG), so it was under pressure to make substantial changes to its model. In addition to implementing blended learning, the school modified its scheduling to three 12-week trimesters, and lengthened class periods to 62 minutes. Last year, enabled by a Gates Next Generation Learning Challenge grant, the school implemented blended in all core subjects. The school principal noted, "A big enabler for us has been the grants… the start up costs are astronomical. Ya know, to buy all the stuff upfront. Couldn't have done it without the grants."

The superintendent communicated the goals of the blended initiative to be student preparation for postsecondary experiences. She believes that today's colleges and careers demand technology skills and ownership over one's work and that Ipads and the blended environment help to cultivate these skills and traits in students. She said,

> our vision is to be equipped to go forward in the future and I think what's happening is the technology piece…the colleges are expecting that there's a degree of technology understanding and half of the work can be done online and this and that. The workplace is changing. So we have put this expectation for our students today. That's helping them, it's giving them that advantage, for work and also for future education. It's more ownership… I see that the vision is to ensure that our kids can utilize the skills that they're getting to have a productive future.

These broad goals related to college and career preparation generally did not ground school-level discussions about blended learning. One teacher did say that she believes blended has increased student ownership over their work, that her class has become more rigorous and that the classwork is more meaningful since blended came to the school, but others—although generally positive— had differing opinions about what blended learning is accomplishing or is supposed to accomplish. The principal talked about how the initiative allows students to take credit recovery classes, which has improved the graduation rate, and how test scores have improved since blended learning was introduced. One teacher focused on how the devices and a learning management system help to ensure that students can access work when they're absent, and another saw a primary benefit of blended learning to be its ability to individualize instruction, especially for higher-level students.

The blended initiative launched at TPS with eight teachers and a group of students, all of whom volunteered to pilot the initiative. Enabled by the grant money, the school quickly scaled up in the second year to provide devices to students in grades 9-11 and have about 2/3 of its teachers receive blended training. This year, all high school students have iPads and the superintendent estimates that the school is "80-90% blended." The administration's expectation for teachers is that by the end of this year, students should have access to everything they need for all courses through the school's learning

management system, Schoology, and that all teachers have participated in blended learning training. But the superintendent admits that some teachers still do not use the blended learning at all.

Blended Learning in the Instructional Core of TPS

Every student in the school has an Ipad and the school and district administration describe the school as using a three-station rotation model. During my school visit, however, observing the three-station rotation was the exception, not the norm (walking around the 1,100 student school for two days, I only observed two classes using the three-station rotation model). More commonly, teachers divide the class into two, rather than three groups, with one group receiving direct instruction from the teacher while the other group completes independent or small group work, which sometimes, but not always, involves technology (I observed five such classes). In these instances, students working at the independent work station rarely had control over the time, place, path, or pace of their learning, but rather progressed through independent assignments in a linear fashion and were generally expected to complete their work during the allocated in-class time. Students who finished early were typically granted excess class time as "free" time.

The school leader accepts teachers' variation from three-station rotation and said that allowing teachers to flexibly use stations and technology has been key to blended implementation. Teachers agreed that they have flexibility in how they use blended: one said, "they weren't picky about how we did it so much as that we used the various learning styles" (direct, collaborative, independent).

Diverse in-class uses. Most teachers use technology for teacher-student communication, work submission (students may respond to short answer questions through online platforms or submit photos of completed worksheets to their teachers), or as a way to access content that might otherwise be handed out on paper (a novel may be online or a teacher may direct students to read a blog post). Some teachers also use the devices for students to input their responses in a Jeopardy-like game called "Kahoot." Two social studies teachers I observed divided their classes into halves and delivered direct instruction to one half, while the other half worked on independent practice, using their iPads to complete and submit work or to access content. Several other teachers who I observed did not use iPads in their classes.

Some teachers at TPS, however, used the iPads to personalize direct instruction or as a way for students to receive instant feedback. One English teacher I observed assigned students to watch a content-related video and take notes from that video. Students could watch the video as many times as they needed, but were ultimately responsible for extracting certain bits of information from it. Two math teachers determined groupings by student-diagnosed need. If students felt prepared to work independently, they were sent to a different part of the room to complete practice on their own while students who still had questions stayed with the teacher. (In one class this worked well. In the other, the practice was misaligned to the diagnostic and students who felt prepared to work independently stopped working when they reached a new kind of problem that they did not understand.) Another class used Khan Academy as a way for students to practice skills, receive instant feedback on their work, and access explanations.

As was true at SCMOS, such uses of blended learning for personalization were uncoordinated in the school and depended on teacher initiative.

Data use. To date, the school has not pushed teachers to use data that come from blended instruction and teachers have not been trained on data retrieval and analysis. When I spoke to teachers about data use, it was clear that the school administration had not broached the topic yet with its teachers. Even teachers who had acted as blended learning coaches admitted to doing very little with data from online systems or programs. One teacher leader/coach said,

> Really, it's hard to do the data driven part into a classroom with 30 kids…basically what they are saying is each kid should be in their own individual path and with the grade book, how does that look with our, just with our class flow, how is that supposed to look?

Another teacher said,

> At this point, I don't use data other than the fact that teachers always use, "Well, our kids didn't do so well on that, maybe I need to repeat it," but there has been no data analysis yet. We just barely got started with that after our first trimester finals. We've been told that we need to keep the data and at future in-service, we're going to be learning how to work with that data. But so far we're not there.

Flex time. The school has a half period each day, called "Cedar block," which is designed for literacy support. The school administration originally envisioned that students would complete practice on a student-adaptive reading program (Achieve 3000) twice per week during this time. But Achieve 3000 has not been working since TPS discontinued its partnership with a blended learning consultancy and support group several months ago, opting instead to manage its contracts directly. Some teachers report that they use Cedar Block time for silent reading, but in most classrooms, students use the time as a study hall—some students make up work, some watch videos on YouTube,

some talk. In interviews, teachers referenced using Actively Learn (also a reading comprehension site) and MathXL (adaptive math content) during this time, but I did not see either of these programs in action during my visit.

Salient Cultural and Structural Features of TPS

This school exhibited a culture and structures that were strikingly different from the other two.

An adversarial culture. An "Us and them" mentality is very apparent among staff in this school. In formal and informal interviews, teachers frequently referred to an undefined, "they" when referencing higher authorities. This "they" could be traced back to school leadership, district leadership, the school's Intermediate Unit (a regional cluster of districts in the state), or other professional development providers. But oftentimes, "they" ambiguously seemed to reference any or all of these groups. Teachers appeared to perceive teachers as a "we" and non-teachers as a "them." Several quotes that I have already used illustrate this point: "*they* weren't picky about how we did it," "what *they* are saying is each kid should be in their own individual path," "*we've* been told…"

This is true despite testimony that teachers have been relatively involved in decision-making related to blended implementation. One teacher noted,

> I think we have a lot of input. There are typical committees on this and committees on that…like from the beginning, there was a committee that was put together to plan the blended training. It was made of teachers and administrators… I think that our district is pretty good at involving people, the teachers themselves in the actual planning.

Despite these efforts to involve teachers in decision-making, "us" and "them" identities appear to run deep in the school's culture.

Low standards and expectations. The school exhibits low standards for how teachers use instructional time and manage student conduct. In stark contrast to interviews in which school and district leadership discussed TPS' high expectations for student engagement, observations revealed weak school-wide expectations for how teachers use instructional time. Although teachers expect students to complete their work, observations revealed that most class periods lack a sense of urgency and teachers tend to accept that a certain percent of students will simply not be on task during class. After observing a student who stared at the Khan Academy log-in screen for about twenty minutes before logging in, I chatted with the teacher who said, "oh? Did he finally get in?" Such an acceptance that some kids will simply 'zone out' during class was not limited to this teacher. In most classes I visited there were about two to five students who spent large swaths of time either engaged in non-academic tasks, such as texting, watching videos on their iPads, drawing, or simply disengaged in the academics (just staring at a paper or screen for long periods of time).

The first and last five minutes of class periods generally involved little to no instruction. While teachers organized themselves and took attendance, students tended to mill about the room and chat, eventually taking their seats. Once students had finished their work for the day, teachers in most classrooms that I observed permitted students to spend the remaining time however they pleased.

Expectations for student behavior and consequences were also murky. Classrooms were generally not chaotic, but the school lacked clear structures and expectations related to student conduct. These weak expectations became particularly obvious during conversations about classroom management and blended learning. One teacher said,

> I think there's an issue with the consequences that kids get because it's always varied and there's no kind of set in stone— if this happens, this is the consequence. I know sometimes it has to be on a student-by-student basis, but I don't feel like we're consistent with our discipline… I think teachers talk about it. I don't necessarily know if the leadership team does.

Weak school-wide expectations for student conduct in combination with large swaths of time in which students are permitted to do what they please leads to a de facto, student-governed culture in much of the school and an acceptance among adults of "the way students are" and what students "will" and "won't" do. This deference for student-created norms substantially impacts blended learning, which introduces new tools and routines, and thus requires new and clear expectations. School-wide expectations for iPad use are either lenient or unobserved and related policies tend to respond to, rather than set expectations for, student actions. For example, students are permitted to load whatever apps like want on their iPads. "The reason being that then they'll keep it with them. They'll bring it to school because there's stuff on there that they want to use."

Staffing for stability and flexibility. TPS has 75 teachers and about 50 additional staff members. Most TPS teachers come from the county in which TPS is located and surrounding areas and many are graduates of TPS. One school administrator reported that sometimes the school administration hires from neighboring states, but that he has found that he often has to retrain teachers from out-of-state because they are typically have lower expectations for student engagement than those trained locally. Teachers at TPS usually stay for their career. Both the superintendent and the principal expressed enthusiasm about their teaching staff. The principal noted that the teaching staff is "very very tight" and the superintendent said, "We have a very very good staff. I have teachers that are committed to the district and have great skills."

Leaders at TPS report that what it looks for in teacher candidates has changed slightly since making the transition to blended. The superintendent noted that she's very focused on hiring teachers who understand differentiated instruction, are flexible thinkers, and are either technologically literate or open to learning. The principal also noted advantages of candidates who understand the technical systems and reported that recently he has favored candidates that have already been through the blended training as student teachers or substitutes.

Staff training and support structures. Initial teacher training for blended learning came from a blended consultancy and support firm. Blended teachers attended professional development for a week at the end of the year during which they spent two days in training on the learning management system and two days exploring different web-based programs and search engines to find materials appropriate for their classes. The teachers tended to think that the training was high quality, but that it did not completely prepare them to use the tools. One teacher said, "the training was as good as it could be, we had a good launching point, but nothing trained me so much as just doing it." Every few months throughout the year, the Intermediate Unit, which oversees several school districts, also provides half-day trainings for teachers.

But the most powerful source of training and support has come from blended coaches in the school. For each of the last three trimesters, a teacher has stepped out of their teaching role to act as a coach. During their time out of the classroom, coaches work with other teachers to develop instructional practices and strategies for the blended learning model and to find technology resources for teachers. One teacher said,

> [having blended coaches has] been very helpful, because what happens is, if you have a question, you have somebody to go to… I think that's probably the most

> helpful thing. As you're doing things and questions come up, you want an answer. Otherwise you get stuck, you don't move on, and that's been ... I think that's worked pretty well, actually, in my opinion.

Another noted,

> [blended coaches], of all people, have the best idea of what our school district is really like, what our high school is really like, what our kids are really like. They have perhaps the more realistic expectation of what we're dealing with in our school.

Communication and collaboration. The extent to which teachers collaborate varies widely by department and grade level. The school only makes time for formal collaboration a few times per year, during professional development days. However, many teachers collaborate informally. Ninth grade English teachers, for example, have lunch at the same time and two of the ninth grade English teachers meet several times a week during a common planning period. One teacher in a different content area, who was teaching a course for the first time this year, reported collaborating with another teacher for several hours per week during the first semester. Another said that although structured time for collaboration no longer exists at the school, some informal collaboration happens in his department.

Teachers are also expected to observe one another and provide feedback as part of the state's new teacher evaluation system. Most teachers with whom I spoke reported that they had completed about five observations by March.

How the Instructional Core Relates to the Cultural and Structural Features of TPS

In this school*, the "us and them" mentality leads to a lack of teacher ownership over blended policies*. The "us and them" mentality at TPS leads teachers to see blended as an initiative operated and "owned" by those in authoritative positions, rather than the responsibility of individual teachers or a collective school community. For example, although teachers were not consulted about Ipad use, they did not express frustration about their lack of input. Instead, teachers discussed school-wide initiatives and policies with an air of detachment and ambivalence. One teacher said,

> At one point, I think it was implied that we had to start using [blended] at a certain point, which theoretically was supposed to be this year, but apparently that was not the case... There's definitely a push in that direction, that they would like to have everyone doing that.

When a different teacher discussed a school policy related to restricting student's freedoms on iPads, she spoke as though the policy was being implemented in someone else's classroom, qualifying her statements with, "I think" and concluding, "I have not heard any kind of results of how well that went."

This culture of teacher detachment appears to stem, at least in part, from distrust that has developed over time from a habit of abandoning policies. One teacher said,

> I've seen a lot of things come and go, and some of them were, 'This is the main thing. This is what we're going to be doing. This is it!' And now it's gone. They don't even like to admit, later, that it is gone, but it's gone… So, that's the one drawback that I can see, is that when the money goes away, the blended will go away.

Reform fatigue among teachers also showed itself when discussing collaboration. With a note, not of bitterness, but of acceptance that nothing is permanent one teacher noted, "we don't get time from the administration to do collaboration. That was something that we had a couple of years ago and that has gone by the wayside."

Furthermore, *the static perception of "the way students are" leads teachers to shy away from blended models that place students in control of their learning.* Because adults in the building tend to take a passive position in setting expectations and thus, have a static perception of "the way students are," teachers at TPS avoid student-driven blended models in favor of more traditional, teacher-led models in which they are confident they can maintain control.

Instead of considering how to use blended as an opportunity to coach students on becoming more self-directed learners, teachers tend to set expectations to match students' current inability to self-direct, and use blended accordingly. As a result, most teachers have modified the three-station rotation model to maintain as much of a teacher-centered class as possible. One teacher said,

> I don't do rotations for the most part, where the 20 minutes in direct learning, 20 minutes in independent, 20 minutes in collaborative. I found that doesn't work very well. I don't feel the students are self directed enough to do that. I tend to do all the ... most of direct as a whole class. Then very often we do independent at the same time. I do all of the things. I just don't rotate the kids through it.…We spend a certain period of time in whole class direct then I may break them down into collaborative and independent and work with the collaborative people more specifically. I don't find that kids can collaborate effectively without a lot of overseeing by me.

Another teacher who has resisted using blended said,

> This seems to be a complaint from most of those that are doing it, classroom management is an issue… if you have three stations and you're teaching one, making sure that the other two are on task becomes an issue. My goal is, when and if I do begin teaching blended, which may happen, that I will have a one (whole) group direct station, and then have them go to two groups, then I can work back and forth between the two groups without having to worry about—with that direct station already taken care of.

Similarities and Differences That Most Impact Blended Learning Implementation

Although the three cases discussed above could be compared along countless dimensions, there are three particularly notable aspects of their implementation approaches and contexts that have shaped how blended learning has taken hold in the schools.

All schools used a flexible implementation approach. All schools discussed here granted teachers the flexibility to integrate online tools into their classrooms as the teachers felt appropriate and helpful. At all three sites, teachers and leaders were happy with this choice. One TPS teacher noted that this flexibility helped her to "buy into" the initiative. At SCMOS, several teachers noted times when they exercised their choice to not use a particular tool that others in their school used because they did not believe it would improve efficiency in their classrooms. And at LCMOS, the principal reflected that the best decision that she has made related to blended learning is giving teachers "a lot of freedom in what they're doing and how they use it, 'cause they've coming up with way cooler stuff than I would have."

The extent to which blended learning was part of a school's identity varied considerably. Blended learning as a component of the school's identity was not uniform across schools. At SCMOS, teachers frequently discussed how the school and teachers at the school are "innovative" and how the school thinks creatively about solving problems of practice. At TPS, the blended initiative also appeared to have taken hold in the school's identity—teachers referred to the school as a blended school or talked about when they "went blended." But in observing classrooms, this identity appeared somewhat superficial. Students often used devices to access content or submit work, but for the

most part, teaching and learning looked traditional and the technology only modestly improved differentiation. At LCMOS, blended learning was something that most of the staff acknowledged as a school element that was "supposed" to be in place. Many teachers in the school, however, openly recognized that, as of now, blended is only a piece of the school's identity on paper.

How the schools implemented blended learning reflected sharply differing articulation of school missions, varied student and staff expectations, and norms. Both LCMOS and SCMOS were designed and established with a clear mission in mind and staff members at both sites intentionally created school-wide decisions and policies to support that mission. When I asked teachers and leaders at these school about the school's cultures and missions, I got very clear responses related to providing students from low-income background with an opportunity to succeed in college, high expectations, and at SCMOS, a spirit of innovation. (It is important to note that LCMOS' culture, while clearly articulated around "performance orientation," "performing and data" and "getting kids to an through college," did not include innovation or personalization through technology use.) By contrast, when I asked teachers and leaders at TPS about the school's mission, they tended to discuss an unintentional (and in their opinion, unfavorable) mission around external testing pressures and high stakes outcomes. And when I asked them about the school's culture, teachers and leaders tended to talk about students' cultural backgrounds and how that impacts the school, rather than a school culture intentionally created by adults. Even when asked about mission and goals for blended, which is a clearly understood priority in the school, leaders at TPS gave inconsistent and scattered answers.

Chapter 5:

How School Environments Support and Sustain Instructional Innovations Like Blended Learning

Although each school profiled in Chapter 4 had teachers who used blended learning to personalize students' educations to greater and lesser degrees, the schools varied substantially in their overall orientations to blended learning and innovative problem solving. These schools' cultures and identities were strongly shaped by the extent to which adults in the school were held internally accountable for their use of blended learning and creative problem solving, and the terms of informal, "social contracts" in the school, both between students and adults and administrators and teachers. The patterns of blended learning adoption and implementation described in the preceding chapter appear to be partially explained by school-wide conditions and actions, including the degree of agreement among the participants concerning what they could expect of each other and the terms of those agreements. This chapter explores these school-level forces and conditions in relation to blended learning, drawing on the contrasts among the three profiled schools and their respective district or charter management organization contexts.

Internal Accountability for Innovation

As discussed in chapter 2, organizational structures and norms shape internal accountability by influencing practices and activities in which community members are held accountable, what adults expect of the community and their peers, and the standards

to which individuals hold themselves (Abelmann et al., 1999). The three schools profiled in chapter 4 displayed strikingly different degrees and forms of internal accountability. Schools differed along internal accountability's three dimensions, but also by the school's focus, making it apparent that schools can have strong internal accountability for one goal, but weak internal accountability for another.

Internal Accountability For Improvement Using Technology

The contrasts in internal accountability among my profile schools suggests the following basic principle: *in schools using blended learning to personalize education, the school community holds itself internally accountable for improvement using technology.* At SCMOS, where innovation was central to organizational culture, adults held one another accountable in public forums for using creative mechanisms to attain the school's goal. Teachers were also acculturated to see the school as an environment that, as one teacher said, was "all about innovation." Although not all teachers at SCMOS sought a blended learning environment, most SCMOS teachers came to the school with a sense of individual responsibility related to continuous improvement and a commitment to the school's mission of preparing students to succeed in a four-year college. In a school environment with collective expectations for innovation, and in which leadership clearly articulated how innovation may contribute to the broader organizational goals, teachers in the community developed senses of personal responsibility for innovation.

In schools where adults did not hold one another internally accountable for innovation and problem-solving using technology, personal responsibility, common expectations, and accountability structures related to innovative practice tended not to be

engrained in the school culture. At LCMOS, like SCMOS, teachers and leaders held one another accountable for working hard to get students to meet academic and social expectations and tended to come to the school with a shared commitment to the school's mission, but shared expectations, perceptions of individual responsibility, and accountability systems did not extend to innovative problem-solving. At TPS, teachers each had their own perceptions of individual responsibility, as it pertained to their work. School-wide goals and expectations—related to technology or otherwise—were unclear, and accountability structures for blended learning use were largely absent. As a result, internal accountability for personalized blended learning at TPS was weak.

Sources of Internal Accountability For Instructional Innovation

As previously discussed, the strength of personal responsibility, collective expectations, and accountability structures for a given school goal may interact and together determine the strength of internal accountability for a given goal (Abelmann et al., 1999). However, how these three organizational dynamics develop and grow in a blended learning environment has been previously unexplored. My analysis reveals potentially powerful strategies for building the three dimensions of internal accountability for blended learning use, including: explicitly linking innovation and blended learning to the school's mission, modeling and showcasing innovation and technology use, emphasizing public practice, collaboration, and teacher voice to support innovation, and using data to provide evidence for blended learning effectiveness and drive instruction. In this section I discuss each of these strategies, the degree to which they were demonstrated

in each of the three schools that this research examines, and how they contribute to Abelmann et al.'s (1999) conception of internal accountability.

Explicitly linking innovation and blended learning to the school's mission. All three schools in this study reported that the school has a mission, but these missions varied along two critical dimensions: 1) the extent to which they were commonly recognized and discussed by the school community and 2) the extent to which they incorporated innovation and blended learning use.

A common mission that grounds the school community. As discussed in chapter four, the clarity of school-wide missions varied by sites. Leadership at SCMOS and LCMOS clearly articulated the school's missions of preparing students to be successful in four-year colleges and ensured that this mission was universally understood and embraced by the school staff. In contrast, TPS teachers and leaders, while commonly reporting some form of student achievement to be central to their mission, were less consistent in articulating what student achievement would ideally look like. One teacher described the school mission to be getting students to score well on tests, another believed that it was to provide students the opportunity to go to college, while the school leader stated the goal as making all students "college *or* career ready upon graduation."

Where missions and school identities were strong, the mission was apparent in school structures, improvement efforts, and school-wide discussions. For example, LCMOS required all students to take a college counseling class, in which they were coached through the college preparation and application process and required students missing their homework to attend "homework center" afterschool, clearly articulating to students that the purpose of homework center was to academically prepare students for

college. At SCMOS, teachers used staff time to reflect on if and how adults in the school were teaching students effective ways of managing their work and regularly linked the conversation to what those skills meant for students' college preparation. The school staff also established "flex" time, in response to feedback that their alumni struggled to productively use the large amounts of unstructured time that they had in college. By comparison, school structures and conversations at TPS did not regularly point to one clear school mission (college-going or otherwise), leading teachers and leaders to have mixed understandings of what that mission was, and school improvement conversations to be disconnected from any central purpose or goal.

Explicitly linking personalized blended learning to the school's mission.

Although LCMOS and SCMOS both had clear school missions of preparing students to succeed in a four-year college, LCMOS and SCMOS differed in that SCMOS faculty saw its central mission to be closely linked to on-site innovation using technology, while LCMOS faculty did not. School leadership at SCMOS used intensive weekly coaching and staff meetings focused on innovative problem solving (SCMOS regularly showcases innovative practices and models technology tools at these meetings) to set the collective expectation that adults in the school think creatively and use technology to continuously push their professional practice. By contrast, the administration, teachers, and students at LCMOS did not explicitly articulate blended learning as a key to mission fulfillment and school leadership did not actively set collective expectations for personalization via blended learning. Rather, school structures and discussions focused on getting students to meet social expectations like their comportment during class and in the hallways, and academic expectations like completing homework as mechanisms for achieving

organizational goals. Because blended learning use was neither a focus of coaching nor school improvement discussions, it did not develop as a common expectation among the school staff. One teacher reflected that blended learning has been pushed to the side as a priority because:

> …some more surface level things that require immediate attention about school culture and like, just things that are very tangible and seen in the hallways really, regarding culture behavior management, are where a lot of our energy around our development, and like our Wednesday meetings (staff meetings), have centered.

Because LCMOS leadership did not socialize teachers to believe that blended learning use was a common expectation, the extent to which teachers viewed blended learning as critical for instructional improvement varied. Some LCMOS teachers did view blended as a key tool for achieving the school's mission and therefore felt responsible for its use. One such teachers stated, "If we're going to prepare kids for college, we've got to do this because they're going to need to know how to do this stuff." But several teachers were confused by how blended might fit with the organizational goals and asked questions like, "what would we ideally want to see come out?" Inconsistent perceptions of how blended learning might contribute to the school's mission fulfillment led individuals in the school to only sporadically feel individual responsibility for its use. With inconsistent individual responsibility and little collective expectations for blended learning, the innovation took its place on the outskirts of LCMOS' identity and internal accountability for blended learning use was weak.

Staff members at both TPS and LMCO only occasionally perceived blended learning to be a mechanism for achieving the school mission, but the initiative met different challenges in the two schools. LCMOS had a clear mission and strong internal

accountability for that mission, but did not incorporate blended learning into that mission. By contrast, TPS attempted to set a kind of collective expectation for blended learning use by framing the initiative as a school priority and communicating to teachers that they were responsible for engaging with blended learning in certain ways (making assignment accessible online, attending training). But the school lacked a clearly stated, and universally understood school mission to give teachers a structure and purpose to guide implementation. As such, when blended learning took hold in TPS classrooms, it did so only according to individual teachers' personal senses of responsibility related to the initiative, which, untethered to broader organizational goals or accountability structures, varied greatly.

Modeling and showcasing innovation and technology use. All three schools provided teachers with some access to information about how other teachers in the school used technology, but only at SCMOS did the school regularly model and showcase blended learning and technology uses in a way that signaled its value to the school community.

At staff meetings, SCMOS teachers used Google tools to give real-time feedback to presenters and teachers regularly presented on tech tools that helped them to solved instructional problems. This use of technology and sharing accomplished two things: it helped good ideas to travel through the school and reinforced the school's expectations for technology-enabled problem solving. Teachers observed that their peers and leaders were innovating and saw that those innovations were valued in the school community. By contrast, LCMOS and TPS rarely use staff time to model and discuss how teachers might solve instructional problems using technology. LCMOS included a tech blurb in the

school's weekly newsletter and the innovation manager occasionally presented at staff meetings, but he reported that although the staff has had occasional development sessions focused on instructional technology during weekly meetings, "it just hasn't really, unfortunately, been like a huge priority in the beginning of this year, and even last year."

Similarly, TPS rarely, if ever, used time together as a full staff to model and reflect on how blended was being used and teachers were generally unfamiliar with how other departments were using the technology (recall the previous blended learning coach who reported that she was unfamiliar with if and how departments and grade levels that were not her own collaborated). And although TPS requires teachers to conduct peer observations approximately once a month, most teachers discussed these peer observations as beneficial for completing formal teacher evaluation systems, rather than gaining exposure to new instructional approaches or improving their use of blended to personalize learning. Even the current blended coach did not have a good idea of how blended was being used in most classrooms— while walking around the school with me, he commented that he was very surprised by how minimally teachers were using technology and stations.

Emphasizing public practice, collaboration, and teacher voice to support innovation. Although all three schools provided teachers with occasional, structured opportunities for professional development related to blended learning, regular collaboration with colleagues, public practice, and strong teacher voice fostered common expectations, personal responsibility, and accountability for personalized blended learning.

Teachers at SCMOS regularly discussed collaborating with their coaches and other teachers. Collaboration often involved developing or implementing new, innovative approaches (such as the new, personalized math remediation course or peer grading systems). And a common refrain among teachers was, "our practice is public." The principal at SCMOS held teachers accountable for collaboration with their colleagues, calling it a "non-negotiable," and described how the school had allocated time for teachers to collaborate, with the specific goal of innovation. He said,

> We have a short day every Wednesday so that teachers can collaborate with each other and talk about practice and talk about school design, talk about things that will hopefully give them more space to think creatively. We also have once a month half days where we do kind of even deeper dives into design work and innovation.

Teachers at SCMOS reported feeling safe expressing their ideas, experiences, and frustrations with the broader school community. Teachers regularly share their challenges with their instructional coach in 1:1 meetings and their colleagues at staff meetings. Such teacher voice enables innovation because the school community openly airs instructional or organizational problems that need to be solved. One teacher noted:

> the way our professional development is run is that we're constantly tweaking and refining our practice and we're tackling best practices where ya know, something that's going really well in one classroom, whether it be tech related or not, it then becomes a best practice and horizontally aligned for all teachers and if they struggle. Our practice is very open and there's a lot of trust that goes into it.

Most opportunities for collaboration at SCMOS existed at the school site. The CMO offered network level professional development four or five times per year, but most teachers reported that this collaboration pales to what they experience regularly at their school. Yet opportunities for inter-school collaboration existed upon request. One

teacher, who is teaching a new course, reported that she and other teachers in the network teaching the course have requested and received several release days to collaborate at the central office and that this collaboration has led to a weekly Google hangout in which teachers share best practices and troubleshoot challenges.

In contrast to SCMOS, most LCMOS structures for collaboration related to technology were hosted at the network level. For example, the network hosted a "tech breakfast" for sharing strategies and teachers reported that there were many sessions on technology integration at the annual CMO-wide summit. But as isolated sessions, teachers tended to refer to these CMO events as minimally impactful. Teachers also reported that, aside from minor support that they have received from the innovation manager at the school, collaboration at the school site has been minimal, especially around technology use. In addition, several teachers expressed that, while they felt that all adults in the school respected one another, teachers were sometimes left out of school-level decision-making processes. Teachers at LCMOS did not explicitly link weak teacher voice to blended learning de-prioritization, but it is possible that by diagnosing and addressing school-level problems at the administrative level, school leaders may have overlooked core instructional problems, best recognized by those closest to instruction (teachers and students), and potentially solved through innovative instructional methods.

Collaboration around blended learning at TPS occurred, but teachers reported that the collaboration that most influenced their instruction occurred sporadically and informally. Teachers with classrooms in close proximity or with the same lunch or planning reported sharing ideas and approaches related to iPad use. The school also used in-service days to formally provide teachers with collaboration opportunities, but these

only occurred three to four times per year. Although TPS teachers noted that these sessions helped them to understand what blended learning was, beyond that, teachers did not point to occasional, structured professional development sessions as particularly meaningful to their practice.

The teachers at TPS also reported having very little genuine voice in school-wide problem solving. As discussed in Chapter 4, teachers in the school tended to defer to the administration to make school-level decisions. As with LCMOS, these conditions may have led school-level policies and "solutions" to be misaligned to the true problems that teachers experienced on a day-to-day basis. For example, teachers at TPS repeatedly discussed classroom management as a concern related to blended learning implementation. However, teachers reported that the topic has not been addressed in professional development. (Recall the teacher who reflected, "I think teachers talk about [discipline issues related to technology]. I don't necessarily know of the leadership team does.")

Using data to assess blended learning use and effectiveness. Teachers and leaders at LCMOS and SCMOS regularly collected and monitored data related to blended learning to assess the effectiveness of their approach and to make adjustments when blended learning programs or systems were not effective. This use of data created accountability in the organizations, not only for blended learning use, but for ensuring that blended learning was having a meaningful impact on student learning. LCMOS' central office collected network-level data on the minutes that students spent on various programs and correlated that usage data with student performance. The principal noted

that these data helped to build her confidence that blended learning was a worthwhile use of resources. She said,

> seeing those correlations it was helpful to know that we should continue to keep using (blended learning)… It's like very very important to me that technology be a means to and end and not an end to itself.

SCMOS also regularly collected data to monitor blended learning use and the effectiveness of various approaches. School leaders regularly administered staff surveys to gauge teachers' perceptions of various approaches' effectiveness and leaders also conducted "school snapshots," or walkthroughs in which leadership took an inventory of the school's design work. The principal explained these snapshots:

> we have a walking tool that uses different kind of quantitative measures of like, how existing products, or the teachers do with their time, students' use of their time. And then we got together and kind of sat down to look at the data and see like what surprised us, what didn't surprise us, what are areas of growth.

These walkthroughs communicated to staff members that continuous improvement and productive uses of space and time were school-wide expectations and held adults informally accountable for innovation.

At TPS, the principal did not report using data to assess the impact of blended learning programs, but did note that he uses online systems to see if teachers have posted all of their resources online and occasionally looks at teachers' resources to monitor their instruction. He noted that the systems were helpful because he no longer has to, "be in and observe a classroom to know what's going on." Monitoring how teachers use technology in this way may help the principal to hold teachers accountable for posting all of their assignments online, but he did not report using those data to launch conversations

with teachers about how they might use technology to better personalize instruction in the classroom. As a result, accountability and shared expectations in the school were for posting assignments online, rather than more personalized instructional methods.

Using data to improve instruction. The way that teachers and leaders in the three schools used data to improve instruction also contributed to the schools' internal accountability for personalized blended learning use. At SCMOS, teachers and leaders regularly grounded improvement discussions in the data that blended learning systems produced. The principal noted that the school uses an information system with online assessment and that teachers regularly use that data system to collaboratively or independently, "look at trends across practice or across demographics." This focus on data was clearly embedded in many teaches' senses of personal responsibility. Teachers regularly mentioned and exhibited real-time data use in class and one teacher noted that a large part of her job is about, "looking at data and figuring out how I'm going to intervene with my students and who I'm gonna to pull for small group instruction the next day."

At LCMOS, teachers and leaders also held themselves accountable for data-driven instruction, but teachers relied far less on blended learning-generated data. One teacher noted, "Our school is all about performing and data" and mentioned how the school uses and systematically analyzes data from various benchmark tests to ensure that students are prepared for end-of-course and college entrance exams. However, for many teachers, internal accountability for data use did not extend to data from blended learning systems. One teacher reflected, "A lot of teachers are not frequently collecting (blended

learning) data and analyzing it to see if it's actually having an impact. Like, ya know, it's happening pretty haphazardly."

Teachers at TPS reported more focus on data-driven instruction than they'd seen in the past. One teacher said,

> I can't say that in the past that (data use) was not a huge thing. In more recently, in the last year or two, there's been more of a ... more focused look at data as far as the individual students are concerned… You do a pre-test, let's say. And this is what you're going to need to know, and then assessing them at the end and seeing what they've now learned out of that. Going back and looking at it to see and determine what didn't they get, and then going over that again.

But as was true at LCMOS, this data use rarely tapped into blended learning data to inform their instruction. Teachers did not feel responsible for using data in this way, largely because they had not yet been trained on how to do so. As mentioned in chapter 4, one teacher said,

> At this point, I don't use data other than the fact that teachers always use, "Well, our kids didn't so well on that, maybe I need to repeat it," but there has been no data analysis yet…We've been told that we need to keep the data and future in-service, we're going to be learning how to work with that data but so far we're not there.

The Role of Leadership in Creating Strong Internal Accountability for Personalized Blended Learning

Leadership played an important role in how internal accountability for personalized blended learning developed in each of the profiled schools. Members of the school community tended to echo leadership's perceptions of blended learning and its role in achieving the school's mission.

At SCMOS the school's use of blended learning for personalization did not play into many teachers' decision to join the school community. But with messaging

from leadership that linked personalized blended learning to the broader school mission (which did attract many teachers to the school), most teachers' sense of personal responsibility for personalized blended learning use, impacting and impacted by broader collective expectations and accountability structures in the school, quickly expanded. In addition, the leadership created structures for blended learning use, including showcased and modeled practice and collaborative data use to assess blended learning effectiveness and improve instruction, which served as informal accountability mechanisms and contributed to strengthening internal accountability for personalized blended learning.

In contrast, TPS leadership had not clearly and consistently articulated a coherent vision for the school, and reflecting leadership, teachers' perceptions of the school's central purpose was fragmented and inconsistent. In addition, TPS leadership established weak accountability structures for personalized blended learning use. At LCMOS, teachers also reflected leadership's priority, which was to establish a culture of high academic and social expectations in the school, rather than spend resources to implement and support blended learning for personalized instruction.

Although leadership clearly plays an important role in establishing internal accountability, there is little evidence to suggest that success or failure for creating a community with strong internal accountability for personalized blended learning rests solely on the shoulders of a school principal. External conditions, including district or CMO supports, staffing pipelines, and freedom to iterate quickly, shape a

principal's ability to create conditions for strong internal accountability for personalized blended learning.

Internal school conditions that predate a principal and over which principals have limited control also likely influence the leader's ability to create strong internal accountability for personalized blended learning. For example, it may be more difficult to create collective expectations in a large school where teachers have limited contact with teachers in other departments or grade levels. In addition, it is likely more difficult to foster personal responsibility and collective expectations for blended learning use among a tenured staff than a young staff, who may have not yet settled into a teaching style, and are more likely to have time outside of school hours to commit to learning or exploring new systems.

Social Contracts Among Stakeholders within the School

Along with the differences in internal accountability—in part embodying the school's accountability system—were sharp differences in the social contracts between teachers and other adults, and between students and educators. As previously discussed, these contracts outline expectations that stakeholder groups have for one another and can have positive or negative organizational effects, depending on their terms.

The contrasts between these schools suggest the following: *social contracts in schools using blended learning to personalize education are built on trust, growth mindset and support***.** Social contracts have particularly strong ramifications for schools implementing blended learning because blended learning demands high levels of trust

among all stakeholders. Administrators and teachers must trust that the individuals they oversee will have a growth mindset and will want to improve their outcomes. In turn, teachers and students must trust that they will receive support as they explore unchartered territory. (For teachers, this takes the form of using new instructional methods. For students, it looks like embarking on independent, self-paced learning.)

In this section, I will explore two key social contracts in blended learning schools: between teachers and administrators and between students and adults, highlighting factors that strengthen and weaken social contracts in the three schools' contexts.

A Strong Social Contract Between Administrators and Teachers

Critically meaningful (and almost always tacit), social contracts between teachers and administrators exist in every school and the content of social contracts between teachers and administrators reflect trust levels between these stakeholders. When implementing blended learning, teachers must trust that administrators and district leaders will provide them with various forms of support (instructional coaching, technical assistance, support in establishing a school and classroom culture that enables the effective use of blended learning) and that they will not be punished for any failures that come from blended learning experimentation. Administrators and district leaders must, in turn, trust that teachers, with support, are capable of change and of using blended learning to effectively personalize learning and improve student outcomes in their classrooms.

Where teacher-administrator social contracts implicated high levels of trust, personalized blended learning took deeper roots in classrooms. In SCMOS, from an

administrator's perspective, the teacher-administrator social contract might read something like:

> *We expect you to commit to our school mission and a growth mindset, work hard to continuously improve your practice, and make contributions to improving the larger school community. We will be particularly supportive of your efforts to experiment and innovate, including the adoption of new practices, technologies, or approaches that promise to improve student learning. We expect that all teachers have parts of their practice that can be improved and we will provide extensive coaching and collaboration time to help you grow professionally, especially where you have undertaken changes in your practice that are unfamiliar and challenging. We will hold you accountable for your practice through regular classroom observations and public discussions about instructional practice, but we will have discussions about professional improvement in safe contexts, without shaming you.*

This contract existed prior to the 1:1, student: device rollout at SCMOS, and trust between administrators and adults in the school is very high. The school has historically used regular 1:1 coaching and had one course facilitator per course to help curate materials for teachers in the network teaching that course. But the school increased support further with the implementation of 1:1 technology, making one teacher a part-time "innovation specialist".

LCMOS attempted to create a teacher-administrator contract with contents similar to that of SCMOS. And, in many ways, the school succeeded in creating high levels of trust among adults. However, administrators had weaker expectations for teachers around their use of blended learning and innovation than SCMOS, and have provided teachers with less support around tech integration. One teacher stated:

> I think um, there is some support there but it's not super constant and we don't get very high quality, um tech professional development on a regular basis for our school.

And as mentioned in Chapter 4, a different teacher stated that he was:

> very confident that the majority of the coaching that's happening between teachers and managers is not regarding the fidelity of the use of the Chromebooks, and kind of the effectiveness of various blended learning techniques.

These differing expectations and support structures related to instructional innovation might lead a typical teacher-administrator social contract to read slightly differently. A social contract between teachers and administrators at LCMOS might read:

> *We expect you to commit to our school mission and a growth mindset, work hard to continuously improve your practice, and make contributions to improving the larger school community. We will hold you accountable for your practice through regular classroom observations and will work with you, as capacity allows, to improve your instruction. We will acknowledge that your job is very difficult and offer you respect and a community of adults who are similarly invested in the school's mission, but we expect you to work tirelessly to achieve organizational goals.*

TPS' environment created yet a different social contract between teachers and administrators. Drawing from findings on school culture and systems presented in chapter four, a typical teacher-administrator social contract in TPS may read as follows:

> *We will hire teachers who we believe capable of delivering high quality, differentiated instruction. We will provide you with formal professional development on new initiatives and will give you access to 1:1 coaching and support, should you request it. We expect you to make some effort towards implementing new technologies, but we will not hold you accountable for deeply integrating new initiatives, including blended learning, into your practice.*

Given such a contract, implementation occurred irregularly in classrooms and took diverse forms. Lacking strong expectations for universal blended use, teachers tended to discuss the blended initiative as a choice—both in how they used it and if they used it at all. One teacher said:

> I use Schoology (the learning management system) exceptionally often, like constantly... [but] I don't do rotations for the most part, where the 20 minutes in direct learning, 20 minutes in independent, 20 minutes in collaborative.

A different teacher said:

> (blended learning) actually hasn't sought me out yet. I'm actually not teaching blended. I use some of the things that are used there occasionally, but as a general rule, I'm not doing blended.

Discussions with school leadership also communicated flexible expectations for how teachers used blended. Despite presenting student-centered visions of blended in which "the kids are running the show," the principal had much more modest expectations of how teachers would actually implement the initiative. He stated the "requirement" to be that teachers grant students "access to everything that they need electronically, so they can really never be absent from their class" and that the teachers attend a formal blended training. As such, teachers perceived blended instructional approaches as something they were "supposed" to do at some level, but not something for which they would be meaningfully held accountable.

Sources of Strong Teacher-Administrator Social Contracts
in a Blended Learning Context

The quality, quantity, and allocation of resources deeply impacted the content and quality of teacher-administrator social contracts as they related to blended learning implementation by signaling to teachers how important the administration perceived blended learning to be in the school community. Below, I discuss various kinds of resource allocation decisions that span school and CMO or district levels—professional

learning systems, the school staff, amount and allocation of staff time, access to specialized knowledge, availability of blended learning tools, external support structures, and available funding— and how they affected teachers' use of blended learning to personalize instruction in this study.

Professional learning systems. The way and extent to which schools elected to allocate resources to professional learning systems communicated to teachers how blended learning ranked among the school's priorities and the extent to which the administration was willing to support teachers in blended learning implementation and innovation. All schools profiled here designated a teacher to serve as the school's blended learning or innovation specialist. But the time freed up for this individual to invest in his or her role and the responsibilities involved in that role varied between sites.

Teachers at TPS regularly referred to a full-time, on-site blended coach (who was a classroom teacher at TPS freed from all teaching responsibilities for the trimester) as one of the most beneficial supports in blended learning implementation. This individual helped teachers to troubleshoot technical difficulties, was available for questions about anything related to blended learning, and checked in with teachers about their use of technology and stations in the classroom. Given other weaker aspects of internal accountability and trust, however, the coaching resulted in "babysteps." A teacher who had previously spent a trimester as a coach said,

> I do think we have some teachers in our building that are resisting, just like being resistant to change. They just don't want to change their traditional values and ways of how they've always taught in a classroom and what they've always done. To get them on-board I would meet with a lot of those individuals weekly and just set up a time, even drop in during their prep time, just to see how they were doing and to see if they had any questions… Getting them to use the technology in their environment. Then getting their kids to use their iPads in their room and finally getting them to try a rotation or two.

LCMOS also had a coach who expressed that he would have liked to play a role similar to the coach at TPS, but teaching a full course-load, he was only had time to provide other teachers with minimal support and guidance. As such, teachers at LCMOS received very little coaching related to blended learning.

SCMOS allocated resources to staff a part-time innovation specialist, part-time teacher. But as previously discussed, SCMOS also provides professional learning support for blended and innovative learning through extensive coaching systems with other administrators, and structured time for teachers to learn from one another's practice. Intensive coaching and professional support was a critical component of the school's identity and teacher-administrator social contracts.

Use of "slack" teacher capacity. One key difference between SCMOS and LCMOS was how it allocated its non-instructional teacher time. As previously discussed, SCMOS' blended learning environment benefitted from the large amounts of time and resources that school leadership allocates to coaching and collaboration. And the principal expressed regret that he could not allocate even more time and resources to allow teachers space to innovate. When asked what his greatest challenge had been related to using education technology, he said:

> I wish I could give teachers two hours a day to have less, kind of, face time with kids. I think really what I would love is to give more 50-50, like you spend three hours a day, like interfacing with kids directly and doing heavy work with kids and then three hours a day, just planning and collaborating. I think getting a cultural balance more like 50-50 kind of more like Singapore and schools where there's like a lot more time for collaboration and planning. I just feel like that would make such a difference. So if I had as much money as schools in New Jersey do that's probably what I'd do, is just give my teachers more time to plan and collaborate and innovate.

LMO, in comparison, allocated most of it's "slack" teacher capacity to monitoring systems designed to hold students to high behavioral and academic expectations (lunch detention, homework detention, tutorials). This signaled (correctly) to teachers that the administration was focused on getting students to meet behavioral and academic expectations, rather than thinking creatively about instructional methods. This allocation of teacher time led teachers at LCMOS to repeatedly reference time as a constraining factor in implementing blended learning.

TPS allowed teachers discretion over their use of "slack" time, which enabled some teachers to experiment with various aspects of personalized learning— some math teachers used student-paced Khan Academy or MathXL lessons in their classrooms while they tutored small groups and one English teacher assigned students to watch (and re-watch it as many times as necessary) an instructional video and extract key pieces of information from it. However, unstructured slack time also led teachers to allocate their energies in a variety of ways unrelated to innovative instruction, leading blended learning implementation to be highly inconsistent between classrooms.

Teacher choice. Teachers at the two charter schools tended to choose to work at their school based on the school's fit with their personal beliefs about education. This fit influenced the terms of their social contracts with administrators. All of the LCMOS and SCMOS teachers who I asked about their motivations to join their school community reported looking for environments that were non-traditional in their charter systems or clear college-going missions. The teachers had all joined the staffs knowing that the schools demanded long hours and commitment, and the staffs valued sharing philosophies and motivations with their colleagues. One teacher from LCMOS said that

he would only work in the charter sector because "everyone's on the same team… there's very little micro. It's all about the big vision."

Even after teachers were hired, staff at SCMOS and LCMOS seemed to think of teachers' employment at their school to be a commitment to others in the school community that teachers were constantly renewing (or not). Teachers and leaders at the two charter schools talked about the school's culture and mission as a constant and that teachers could choose to stay working in those conditions or leave the school. One teacher from SCMOS said while talking about the school's approach to collaboration, "You figure out if that's your thing, if that's too much for you or not." In contrast, TPS faculty saw the teaching staff as the constant, with one teacher noting how policies, rather than teachers, "come and go." This belief impacted the terms of teacher-administrator social contracts. In response to (and in perpetuation of) social contracts that established the teaching staff as a constant, surrounded by ephemeral policies, the administration implemented blended learning in a way that accommodated teachers who may be resistant to change or professional improvement.

Teachers at SCMOS and LCMOS rarely reported that they specifically sought a blended learning or high-tech environment, but when blended learning was clearly presented and understood as a mechanism that would help the school to achieve its mission, as it was in SCMOS, teachers tended to respond positively.

Although most teachers at LCMOS and SCMOS came to their school because of its broad mission to prepare disadvantaged students for college, in some cases teachers were specifically looking for a school in which they would have room to experiment and innovate. In these instances, the terms of social contracts between the teachers and

administrators were shaped by the extent to which expectations matched reality. At SCMOS, teachers looking for an innovative setting felt that the school had provided such an environment. However, at LCMOS, one teacher who had joined the staff looking to help the school imagine and build a high-tech, personalized environment in its early years was frustrated that blended learning and personalization had become such a low priority for the school. In this instance, the teacher felt that the administration had not upheld its end of the social contract and ultimately left the school.

Maintaining a staff committed to school values and priorities. School administrators at all schools tended to think highly of their teaching staffs, and all three school leaders communicated being selective in their hiring. However, charter school leaders spoke more than the TPS leaders about experiences in which they had made it clear to teachers that they were not meeting expectations. And when teachers at the charter schools were unresponsive to coaching or unwilling to adjust their practice, teachers (usually willingly, but sometimes unwillingly) left the school. This was particularly true at SCMOS, whose leader reflected:

> I've had teachers who have really struggled to collaborate with other teachers and to have kind of really professional collaborative conversations with peers. In those situations, you can't work at our school or not be a collaborator; you can't be at our school and not be professional when you talk to other people. That is non-negotiable for our school. Umm, and if that's something that you're not really interested in it, if that's something that you're not interested in investing energy and getting coaching on, then you might want to work at a school… I've had 2 of those conversations in the last 2 years with people, and I think people chose to move on just (because of) the kind of classroom culture that we expect our teachers to be able to hold.

LCMOS had similarly given feedback to a teacher about how her practice did not fit the school's mission and that teacher decided to leave the school at the end of the first

semester. By contrast, TPS saw minimal teacher turnover and veteran teachers with fixed practice and mindsets created some implementation challenges. The principal reflected:

> I think that's been the hardest part… Some people say, oh I've been doing this for 20 years and my kids have always been all right. Or that's the way I went through school and ya know, everything's all right and I don't need to change.

TPS leadership did not indicate that they wanted to dismiss such teachers from their staff, but accepting the permanence of staff members who resisted blended learning in this way made it more difficult to consistently use blended learning to personalize education and for leadership to embed innovation in the school's identity.

Availability of blended learning tools and specialized knowledge. All three schools in this study had purchased enough devices to have 1: 1 student: device ratios and teachers at all three schools noted that "just having it" (referring to the devices and bandwidth) has dramatically changed how they are able to use technology in the classrooms. Unlike the other two schools, SCMOS did not use technology tools that have a cost, which may have acted as a barrier in other settings. But at SCMOS the culture was such that teachers focused on solutions over barriers and found other ways to solve instructional problems. When asked if cost restrictions stood in the way of anything a teacher might like to do with technology, the question seemed to strike one teacher as slightly counter-cultural and she replied, "I try not to— I mean, I can do whatever I think of."

In addition to available blended learning tools, teachers at all three schools benefited from access to teachers designated as part or full-time blended learning specialists. Although these specialists differed in their time and capacity to coach teachers on blended learning use, teachers at all three sites highlighted the blended

learning specialists as a powerful source of knowledge and professional development. A teacher at TPS reflected,

> My experience has been, anytime I've had a question, I've had an answer, like, within minutes. That's been very helpful. I think that's probably the most helpful thing.

Similarly, a teacher from LCMOS said that the school's tech innovation specialist has been "very receptive" and recounted a story in which the specialist provided immediate support when the Internet was slow in her room. And SCMOS teachers reflected on how she has found professional development sessions that have spotlighted the knowledge and practice of other teachers in the building to be particularly powerful.

High capacity external supports structured to respond to teachers' blended learning needs. Teachers at all three schools reported that their district or equivalent office provided blended learning support, especially when they encountered technical issues. However, at LCMOS and TPS, where there was little accountability for innovation, the schools' central offices tended to offer (and teachers asked for) very little beyond technical support and formal, structured professional development.

Few LCMOS teachers from these schools reached out directly to the regional office for blended learning support, in part because blended learning was not a school-wide priority (and was therefore not a personal priority for most teachers), but also because of a commonly held belief that the office had little support capacity related to blended learning. Multiple teachers noted that a particular innovation manager at the central office was very knowledgeable, but they also commented that, "she's spread pretty thin" or how given her limited capacity, there hadn't been "a lot of, like, instructional support on the implementation side."

Teachers at TPS did not question the district office's capacity, but tended to think of the central office's role in blended learning implementation as one of logistical, rather than instructional support. For example, one teacher noted that she thinks that the district has been very helpful in purchasing devices and providing technical support, but said, "my only complaint is that it takes new students a little long to get their iPads." Instead of thinking of the central office as a resource for instructional needs, when TPS teachers had questions related to blended learning they tended to ask other teachers and administrators in the building.

In contrast to LCMOS and TPS, teachers at SCMOS repeatedly made references to the CMO's central office and the support that it had provided. One teacher noted how the central office worked with a software developer to get her a product for free, and two other teachers with whom I spoke had worked with the office closely to develop their own online tools. SCMOS teachers felt that the central office was willing and able to support any concern or vision that they had related to instruction and blended learning, from quickly addressing technical glitches to providing assistance in finding an online tool to working with teachers to develop online tools and software.

Overall funding levels. School and district leaders from all three organizations noted that start-up funding that came through grants and donations was critical for purchasing devices and getting blended "off the ground." However, beyond start-up funds, overall funding levels only appeared to dictate which programs a school used. For example, the principal of LCMOS noted,

> there's like a lot of programs out there where if I was in a different funding environment I would 100% be using. Like Read 180, Rosetta Stone for Spanish and for Spanish. If I had more money- oh my God, I'd go crazy.

And the principal of TPS commented that the school hadn't invested in the program Apex because of the cost. However, neither leader discussed these cost barriers as major obstacles in reaching a goal of personalized, blended learning or noted that teachers resisted blended learning because they believed available tools to be low quality.

A high-funding context clearly allows teachers and leaders to purchase different (presumably higher quality) online instructional programs, but importantly, SCMOS was able to create an innovative environment, despite limiting its instructional software and online tools to free resources. In fact, the necessity to use free resources may have pushed teachers to think about innovation in a different way, imagining programs from the ground up, rather than always forcing pre-made programs into their classroom contexts.

Freedom to quickly shift resource allocations. All schools profiled here benefited from their ability to change blended learning systems quickly. None of the schools engaged in long-term contracts with content providers and on several occasions, schools added and terminated contracts with program and support providers as they felt appropriate. With small staffs and without collective bargaining agreements, however, the charter schools were particularly flexible in how they allocated their resources. The CEO of SCMOS reflected that functioning as a charter has enabled the degree to which the organization has been able to innovate, saying:

> We're pretty nimble. We can move fast on things. Decision-making is not too complicated because we're small and because we're charter. I was a former chief academic officer for [large urban school district] so I'm pretty familiar with ya know, the whole process in a large urban district. We can move way way faster... It's pretty easy to throw ideas out, get some initial thinking about it, and then enough consensus to let some people move on ahead and try things. And it doesn't take having a bunch of meetings, it doesn't- we aren't bounded by any

> constraints, ya know contract constraints, so we can, we can make changes to class sizes, the length of periods, or something like that pretty easily.

LCMOS, in its second year of operation, also changed policies and reallocated resources relatively frequently, such as the use of advisory time or teachers' duty responsibilities, in response to shifting school priorities. However, as a secondary priority, resources related to blended learning were only reconsidered when higher priorities were threatened. For example, when the Spanish teacher left the school mid-year and the administration was faced with the possibility that students would not receive Spanish instruction, the school leader purchased Rosetta Stone to provide students with content and practice while various administrators monitored the classes.

A Strong Social Contract Between Students and Adults in a Blended Learning Context

Social contracts also exist between adults and students in every school and frame academic and social expectations of students. But student-adult social contracts also outline the extent to which students expect their teachers to create an academically engaging, rigorous, and safe environment. In some schools, expectations of teachers and students are reciprocally low; students and teachers strike a "bargain" in which students tacitly agree to keep peace in the classroom if teachers assert modest academic expectations on them (Sedlak, Wheeler, Pullin, & Cusick, 1985, p. 205). In other schools, the expectations are reciprocally high. Schools that fit the latter description tend to be high-trust organizations and achieve better student outcomes than lower-trust comparison schools (Bryk & Schneider, 2002).

Strong social contracts and trust between students and adults are particularly important in a blended, personalized learning context, where students spend a good deal of time working independently on the computer. Students must trust that their teachers are using blended learning to further the students academically (that they are not just putting them on the computer to avoid teaching responsibilities) and must believe that they will be held accountable for their independent work. Teachers must trust that, with scaffolding and support, students are capable of self-directing their learning and using their time wisely.

As might be expected, where social contracts and trust were strong in the observed schools and classrooms, blended learning implementation was smoother. In SCMOS, the social contract from a teacher's perspective might read something like:

> *We will work hard to ensure that you are academically and socially prepared to be successful in a four-year college when you graduate and we are willing to build and use new tools to accomplish our goal. We will provide a focused, safe environment, rigorous academic courses, and will coach you to develop non-cognitive skills like growth mindset and perseverance, which will help you to use innovative systems in this school, but will also help you to be successful in college. In return, you must be willing to work hard and must contribute to maintaining a safe community. We will help you to understand why we operate the way that we do, but we will not change to accommodate your immediate desires or habits.*

As was true with teacher-administrator social contracts, many elements of this social contract existed in SCMOS before the emergence of blended learning. The school's mission to prepare students to be successful in a four-year college and commitment to create a safe environment, for example, acted as a foundation to which agreements about technology use and growth mindset were added. With this social contract secured, teachers never mentioned classroom management as a technology-

related concern. Students understood their responsibilities, goals, and what was expected of them when they were on and off computers. The principal of SCMOS reflected,

> I feel like most of the students have really stepped up to recognize the responsibility that we are giving them, the value we have for our students, the trust we have for our students, is a really productive thing and students really start to learn how to use their time to be more self directed because they have computers and all their classes are online.

LCMOS and TPS failed to create such student-teacher social contracts for different reasons. LCMOS was trying to create a similar social contract, but did not incorporate blended learning as a priority. In addition, the operative social contract in the school did not read as the school faculty would hope. Adults at LCMOS were often not fulfilling their promise of creating a calm, focused environment (relations between students and adults tended to be adversarial), so student actions often reinforced the existing environment, creating a cycle of adult demands and student resistance. In addition, in its second year of operation, LCMOS had little evidence that teachers could or would fulfill their promise of students succeeding in college, depriving adults of proof of their method's effectiveness, which otherwise may help to establish trust.

TPS differed from the charter schools in that its social contract between adults and students involved lower expectations and looked more like what Sedlak et al. (1985) describe as the default bargain between adults and students in high schools. TPS' student-adult contract might read something like this:

> *Our teachers will provide you with instruction and some will go out of their way to help you succeed in their class. You will often have free time during classes and, in return, we expect that you will help us maintain a safe, calm environment. We accept that you will sometimes be unfocused and when you are, we will generally not make too many demands on you, so long as you are not disruptive. With some exceptions, we expect that you will not be able to self-direct your own learning or practice self-*

control and we will adjust our instructional methods to meet those expectations.

This student-adult contract, which represents the norm, but not every single relationship, created conditions in which teachers found it difficult to get students to focus on academics during unsupervised, independent computer work. TPS' social contract did not provide teachers with regularly articulated school-wide goals for students, support in teaching non-cognitive skills like growth mindset, perseverance and time management, or school-wide expectations about student behavior, all of which are likely necessary for the effective use of personalized blended learning. As a result, many teachers adjusted their blended learning implementation in a way that preserved a teacher-centric classroom in which technology was used to improve efficiencies, but not to personalize education.

Sources of Strong Student-Adult Social Contracts in a Blended Learning Context

Given the importance of strong social contracts for blended learning implementation, it is critical that we understand what enables and constrains the establishment of such contracts in schools implementing blended learning. Although this study did not include student interviews or focus groups, theory-supported observations and interviews with adults points to a set of school and system-level factors—explicit instruction on mindset and non-cognitive skills, school choice for teachers and students, and a history of school success— that likely shape the terms of student-adult social contracts in these blended learning schools.

Explicit instruction on mindset and non-cognitive skills. One key strategy that contributed to strong student-adult social contracts in blended learning classrooms was adults' focus on explicitly teaching students the value of non-cognitive skills, including growth mindset and time management. One teacher at SCMOS noted that growth mindset was something that the staff talks about with students "all the time" in and out of class and reinforces through posters and out-of-school experiences. The school recognizes that students will not enter the school knowing how to self-navigate their own learning, so teachers, especially those of completely self-paced courses, spent the first week or so of classes teaching students protocols, routines and setting expectations for how to work in the class. Teachers also monitor students' "soft" skills throughout the year. For example, teachers administered a survey to students in January to gauge how students were managing their time and assignments. Then teachers collaboratively reflected on these survey data, and planned to work with students who struggled with time and task management to improve those skills.

LCMOS and TPS did less to explicitly coach students in skills like time management and self-direction, especially in relation to blended learning. Both schools used advisory as one strategy to develop such skills in their students, but in both schools these advisory blocks had scattered purposes. If teachers used this time to develop "soft" skills in students, they spend a small fraction of advisory time doing so. LCMOS used punitive structures (lunch and afterschool detention) in an attempt to instill traits like responsibility and time management in students, but the effectiveness of these structures was unclear. At TPS, coaching students on how to be self-directed learners with growth mindsets, perseverance, and strong time-management skills may have occurred in some

classrooms, but there were not school-wide structures to support this kind of instruction. The absence of such structures may have contributed to TPS teachers' complaints about classroom management while using blended learning.

School choice for students and teachers. Another factor that may have enabled strong social contracts between students and adults in schools was choice. If a student and their family *decided* to attend a school, rather than being assigned there by zoning policies, they were likely to be at least somewhat invested in the school's mission and program. SCMOS and LCMOS made students' tacit commitment to the school's expectations even clearer for students and families by requiring them to sign a contract acknowledging their commitment to the school's mission and policies. In these instances, elements of the social contract were more than tacit; rather, they were formalized by circumstances leading up to student enrollment.

Teacher choice was also likely a factor in establishing strong student-adult social contracts. As previously discussed, teachers at LCMOS and SCMOS chose to work at their schools based on the schools' missions and values and teachers who were not a good fit with expectations tended to leave the school. A teacher workforce with a clear and consistent commitment to school values, which are embedded in a strong student-adult social contract, likely leads students to trust that adults in the school will follow through on their promises.

History of success in supporting student learning and future options. Another factor that may contribute to the strength of student-adult social contracts is the quality of evidence that the school will uphold its end of its long-term bargain. SCMOS had graduated many classes from high school and some from college. The school publically

posts students' college acceptance letters and brings their alumni in college back to talk to the current high school students to reflect on their high school and college experiences and note particularly valuable lessons. This helps to validate SCMOS's message that students' hard work will pay off. The school also fosters pride in the community by celebrating its performance, which is very strong compared to their surrounding district: In the most recent year of data (2013-14), 74% of SCMOS scored proficient or advanced on the state test in English/ Language Arts and 82% scored proficient or advanced in mathematics (compared to 44% and 48% respectively in the surrounding district) (CA Department of Education, School Accountability Report Card). LCMOS, by contrast, is only in its second year of operation. As such, students (in the 9th and 10th grades) had no solid assurance that the school would follow through on its promises.

TPS lacked both student choice and a clear mission against which students or parents might compare actual student outcomes. Students at TPS could, however, look to past student outcomes as a signal of what might be expected of them. TPS, unlike LCMOS and SCMOS, hopes to make its students college *or* career ready and, by traditional metrics, has met mixed success. In 2012 (the most recent year of data available), less than 70% of economically disadvantaged students graduated[4], 40% of TPS students scored at or above proficient on the state's reading test and 34% scored at or above proficient on the state's math test (PA Department of Education, "n.d."). One staff member who had been at the school for many years estimated that the school now sends about 45% of its students to postsecondary institutions of any kind, but that more students ultimately attain two-year than four-year degrees. Given this history of relatively

[4] 67% of the students are classified by the state as "economically disadvantaged." (PA Department of Education, "n.d.")

weak outcomes, teamed with relatively low instructional expectations, diligence in high school may be only abstractly linked to desirable long-term future outcomes for students.

The Role of Leadership in Creating Social Contracts that Support Personalized Blended Learning in a School

As is true for fostering internal accountability, leadership plays an important role is establishing social contracts in schools, both between teachers and administrators, and students and adults. Leadership's allocation of staff time and financial resources to support personalized blended learning, as well as how readily administration reallocates resources in response to teacher and student needs contributes to the strength of teacher-administrator social contracts, as they relate to personalized blended learning. At SCMOS, the allocation of significant administrative time to coaching teachers and the regular use of staff meeting time for teachers to present their use of blended learning for personalization signaled to teachers that the administration valued personalized blended learning and would provide necessary supports for successful implementation. Conversely, the shortage of embedded, ongoing professional development for personalized blended learning, and the decisions not to solicit teacher feedback on blended learning systems (and subsequently adjust resources) at TPS and LCMOS weakened teachers' trust that the administration would support teachers sufficiently, should they move forward with blended learning implementation.

Leadership also has the power to influence student-teacher social contracts, albeit less directly. Leadership may communicate to teachers the importance of coaching students in non-cognitive skills or provide and model such coaching to students in

school-wide meetings, as SCMOS did. LCMOS and TPS leadership placed far less emphasis on developing students' non-cognitive skills, both in direct communication with students, and in as communicated to teachers. In stark contrast to SCMOS, where non-cognitive skills were talked about "all the time," no teachers at LCMOS or TPS said that developing students' non-cognitive skills was a school-wide priority.

As is true for internal accountability for personalized blended learning use, there is little evidence to suggest that success or failure for creating strong social contracts for personalized blended learning in a school community rests solely on the shoulders of a school principal. Schools typically have leadership teams, rather than a single principal. Therefore, leadership's influence on social contracts does not generally sit with one individual, but rather with a team of leaders who collectively (intentionally or otherwise) set school priorities and allocate resources. In addition, this chapter highlights several factors that impact social contracts over which school leadership may have little control, including student and teacher choice, freedom to quickly shift resource allocations, and history of success with past students.

The Interdependence of Social Contracts and the School's Internal Accountability System

In this chapter I have identified internal accountability and social contracts as meaningful contributors to how blended learning takes hold in classrooms to personalize education. I discussed how each of Abelmann et al. (1999)'s components of internal accountability— individual responsibility, collective expectations, and formal accountability—shaped blended learning implementation in the three sites and specific

mechanisms that strengthen or weaken each of these components and, in turn, overall internal accountability for personalized blended learning use in classrooms. I then examined the role of social contracts in the three schools, the strength and content of which emerged as critically important for innovative practice.

Internal Accountability And Teacher-Administrator Social Contracts

As described in this chapter, teacher- administrator social contracts interact in important ways with each component of Abelmann et al.'s (1999) internal accountability framework. The selectivity and intentionality of teacher hiring has key implications for teachers' individual senses of responsibility. How teachers and administrators understand responsibility to be divided between teachers and administrators at the time a teacher enters a school community shapes mutual expectations, or social contracts. The terms of these social contracts—teachers' orientation around school culture, growth mindset, and collaboration, and how administration agrees to support teachers through resource allocation decisions—greatly impact blended learning implementation at the instructional core. The aggregation of individual social contracts then shape broader norms and collective expectations in the school and reinforce teachers' senses of individual responsibility related to blended learning, whether weak or strong.

Social contracts are also inextricably linked to accountability structures in schools, which may take a variety of forms, including public practice in professional learning communities and regular observations and debriefs with an instructional coach. The extent to which school leadership chooses to use such structures to formally or informally

hold teachers accountable for certain practices, such as the use of blended learning for personalized instruction, influences the terms of teacher-administrator social contracts, as they are exhibited day-to-day in schools. As teachers' build individual responsibility and collective expectations around the terms of a given social contract, they are also likely to hold one another accountable for such contracts during structures professional learning sessions or informal conversations.

Internal Accountability and Student-Adult Social Contracts

I include a discussion of student-adult social contracts here because the terms of these contracts shape school culture and strongly influence how blended learning takes hold in the instructional core. Just as individual responsibility, collective expectations, and formal accountability influence teacher-administrator social contracts, they too may influence social contracts between adults and students. This study does not dig deeply enough into student-adult relationships to fully understand students' senses of individual responsibility, collective expectations, or how they are held accountable. But the study does provoke questions about how internal accountability theory might apply to student-adult social contracts, particularly in the context of blended learning environments.

Chapter 6:

Conclusions and Implications

This study examined what blended learning instructional practices look like inside of classrooms, how schools structure the implementation of blended learning, and what within the school and larger oversight context enable or constrain the implementation of blended learning. Specifically, this research explored how aspects of CMO and district contexts, structural and culture features of schools, practice-specific resources (including specialized knowledge, professional learning systems, funding levels, availability of blended learning resources, and the teaching force and their time), and school leadership influence the extent to which schools act as learning organizations and implement blended learning for personalized instruction.

Profiles of three blended learning environments, presented in chapter 4, helped to answer questions related to what blended learning looks like in classrooms and how implementation was structured, while questions related to enabling and constraining factors are answered through analysis presented in chapters 4 and 5. My findings highlight certain aspects of learning organizations that appear to be particularly important in the profiled schools.

Summary of Findings

In chapter 2, I presented a framework that includes aspects of school culture and structures historically linked to organizational learning, which anticipated factors that may influence an organization's use of blended learning for personalized instruction. This framework included the following factors: shared mission/ vision, strong internal

accountability, supported by personal responsibility, collective expectations, and accountability structures, and strong social contracts for innovation, backed by supportive resources.

Findings, presented in chapters 4 and 5, highlighted several of the anticipated elements of organizational learning to be important in blended learning environments. I find that communication, trust, and internal accountability are key enabling factors at SCMOS. In addition, I find that the absence of the above factors constrains the use of blended learning in some schools. An opaque blended learning mission, weak internal accountability, low expectations, a static mindset, and weak use of data constrained schools' use of blended learning for personalized instruction. I find that these and other factors discussed in chapter 5 influence internal accountability and social contracts within schools, which in turn, shape personalized blended learning use.

*Internal accountability influences organizational learning and blended learning for personalization***.** Looking across the three sites' school-level dynamics, I find strong internal accountability to be a particularly powerful force in schools' use of blended learning to personalize education. I draw from previous scholarship to define internal accountability in schools as a function of individual senses of responsibility, collective expectations, and formal and informal accountability systems (Abelmann et al., 1999). Defined as such, I find that several school-level practices enabled internal accountability for improvement using technology, including: explicitly linking innovation and blended learning to the school's mission, modeling and showcasing innovation and technology use, and emphasizing public practice, collaboration, and teacher voice to support innovation.

*Resource allocation decisions influence teacher-administrator social contracts and personalize blended learning implementation***.** A function of both school-level decisions and district or CMO contexts, I also find resource levels and allocation decisions to impact the extent to which schools operate as learning organizations and use blended learning to personalize education. I find that resource levels and allocation decisions have a particularly strong impact on teacher-administrator social contracts and that the contents of these contracts are related to critical aspects of organizational learning, including communication, trust, and expectations. Specifically, I find that the quality of professional learning systems tied to blended learning use, amount and allocation of staff time, teacher choice and staffing to match school mission, availability of blended learning tools and specialized knowledge, external structures to support teacher innovation, available funding, and the freedom to quickly shift resource allocations all impacted teacher-administrator social contracts and, in turn, impacted organizational learning and how blended learning was used in classrooms to personalize education.

*Student-adult social contracts, impacted by both school-level decisions and the school's broader context, influence personalized blended learning***.** I find that a school's ability to function as a learning organization that uses blended learning to personalize education is influenced by student-adult social contracts, which are shaped by classroom and school-level practices. Although this study did not collect data from students, observations and adult interviews supported by data lead me to believe that explicit instruction on mindset and non-cognitive skills, school choice for teachers and students,

and a history of school success shape student-adult social contracts, as they relate to blended learning.

Alternative Interpretations of Findings

My findings focus on factors that emerged as most influential in how teachers used blended learning in their classrooms to personalize education, but are not meant to exclude other factors from possible influence. Factors that were discussed less frequently but may impact implementation include: content quality, meaningful relationships between school or central office staff and content providers, the presence of competing initiatives, blended learning implementation using a design or research and development mindset, established organizational norms, and external accountability pressures. Some teachers and leaders in the three schools from with I collected data but did not profile in this study also discussed these factors.

Content Quality

Some CMO and district leaders discussed that available online content in some areas is still weak (teachers most commonly complained about content quality in science and social studies) or that it is difficult to determine which content is high quality and standards-aligned and which is not. Among the profiled schools, this concern was mostly raised by individuals at the CMO or district level. Teachers only occasionally discussed content quality as a factor that influenced their use of blended learning for personalization— available content did not appear to influence teachers' use of technology for personalization nearly as much as cultural aspects of the school

environment did. LCMOS and TPS paid for several of the same programs and their use varied widely, while SCMOS created many of their tools and featured an innovative organizational culture. Concerns about content quality and alignment was, however, shared by others in the broader sample and its importance should not be fully discredited.

Relationship with Content Providers

Another factor that CMO and district-level administrators discussed as potentially impactful was external partnerships with content providers. Individuals in all three schools profiled here had some direct communication and feedback channels with content providers, but the frequency and substance of the relationships differed. SCMOS partnered with software developers to build tools that their teachers had developed, at LCMOS content providers occasionally provided training and the school's tech lead communicated with software representatives to answer teacher questions, and individuals at TPS mainly received training from and communicated with individuals from a blended learning support organization with which the district contracted. Other, non-focal sites in which traditional teaching and a hierarchical adult culture dominated also tended to be marked by this kind of formal, occasional contact with content providers. Although some individuals at TPS noted interaction with content providers to be helpful in troubleshooting or providing initial training, this study produced little evidence that direct interaction with content providers was a key factor influencing how teachers used blended learning to personalize instruction. On-site embedded professional learning support appeared to be much more impactful.

Competing Initiatives

Blended learning was being implemented alongside several other key initiatives in all three schools during the course of this study. Most notably, teachers were adjusting their practice in response to new state standards (the Common Core State Standards and Next Generation Science Standards) and new state- mandated teacher evaluation systems. A few school leaders expressed concern that teachers may be wary to innovate for fear of failure and a negative effect on their evaluations (this was more true at non-focal sites than those profiled in this study), but most leaders felt that the use of blended learning would be reflected positively in new teacher evaluation systems. Furthermore, principals commonly found that technology facilitates conducting evaluations and debriefing observations with teachers. Few teachers, however, cited new standards or teacher evaluation systems as particularly influential in how they used blended learning in their classrooms.

Approaching Blended Learning With a Design Thinking or R&D mindset

This research provided some evidence that approaching blended learning implementation with a dynamic mindset, focused on design thinking and research and development, leads to productive iteration. Central office-level charter leaders interviewed in this study discussed this kind of thinking, and district leaders occasionally referenced pilot programs and R&D approaches as well. But, with the exception of SCMOS, iterative, design thinking was rarely, if ever, discussed at school sites. Although the use of design thinking in schools did not emerge consistently enough in the data to

claim it as a key enabler of personalized blended learning, ways that schools, CMOs, and districts use design thinking and the impact of this kind of thinking is an area that is ripe for deeper research.

Established Organizational Models and Norms

Another possible explanation for how blended learning was used for personalization across the three schools in this study rests in the extent to which individuals in the organization felt themselves to be perpetuating or implementing established organizational models and cultures. For example, LCMOS, while a small school, exists within a broader structure of a well-established CMO that has well-established practices and norms that, while not mandatory in the CMO's schools, are commonly observed across sites. It is possible that the teachers joined the organization with an image of what a typical school in that (well-known) CMO looks like and that this image led teachers to focus on creating a school that matched their beliefs about how schools and classrooms affiliated with the CMO operate. In addition, the principal in the school had previously been a teacher and a leader in a different school in the network, which had strong academic outcomes and was similarly focused on creating a strong social and academic culture, but not focused on the integration of technology for personalization. It may have been natural for the leader to instate in her own school the methods of the school in which she was trained, rather than looking to more innovative methods with which she has had little experience.

Similarly, TPS carries with it a history of practices and cultural norms. The school is nearly 50 years old and the leader and many of the teachers have worked at the school

for several decades. It is possible that salient aspects of the school culture, such as an "us and them" mentality and low standards for how teachers use instructional time and manage student conduct have existed in that school for many years and that those characteristics, while not explicitly stated, are linked to what those in the community expect of the organization. Under these circumstances, establishing strong internal accountability and social contracts requires first dismantling established beliefs and mentalities. It is possible that operating in an established setting with established norms that did not support personalized blended learning added an extra layer of implementation challenges. Similar resistance that I observed in non-focal district schools supports this theory.

External Accountability Pressures

The schools in this study also varied by the extent to which they faced immediate pressures from external accountability systems, both formal (such as state accountability systems) and informal (such as accountability to the community). SCMOS had been performing well for a number of years, so while it is subject to state accountability systems and the approval of the community it serves, it was not in danger of immediate intervention from the state or its CMO.

By contrast, LCMOS was a young school, attempting to establish itself with a strong reputation in the community, state, and CMO. Although the school faced no immediate sanctions from any of these bodies, the school was developing its reputation in the community and broader CMO, which may have influenced the school leader to allocate resources in a way that supported more traditional, "tried and true" methods like

traditional tutoring, and lunch and afterschool detention. TPS was under even more external accountability pressures—it was in its fourth year of state "corrective action." Although the school's accountability status had in part prompted the school to incorporate blended learning (it was part of a formal school improvement plan), it is possible that the substantial external pressure to improve led those in the school community to wade cautiously into unknown instructional methods, which if unsuccessful, could result in steep performance declines. Such external accountability pressures could also come with district mandates that restrict innovation. For example, a non-focal district school in the broader study faced external accountability sanctions and was forced to use a very rigid math curriculum.

Practical and Theoretical Implications

This research highlights strong internal accountability and social contracts as key enablers of blended learning implementation. But this work also digs deep into three schools to produce findings related to how schools may create such conditions. When strong internal accountability and social contracts do not exist in schools, this research considers what about the school and contextual environment stands in the way of these conditions and personalized blended learning. Findings provide practical implications for teachers, principals, and district or CMO leaders, but also help to build theory about innovative school contexts and conditions. This section begins be presenting implications for practice, then discusses this study's implications for theory.

Practical Implications

I find interactions between three sets of stakeholders to impact the use of personalized blended learning: 1) students and school staff, 2) teachers and administrators, and 3) individuals working at the systems level. This research might lead educators moving forward in their implementation of blended learning to specifically consider how they are or are not creating enabling conditions as outlined below.

Implications for school staff. This research points to the possibility that stressing the importance of growth mindset and non-cognitive skills to students may help to strengthen student-adult social contracts that enable the effective use of blended learning for personalization. Such findings are supported by leading education psychologists' work on motivation and an orientation towards growth over achievement (Dweck, 2007). Adults may also help to establish strong student-adult social contracts in support of personalized blended learning by consistently and frequently articulating a school vision and mission to students and communicating how blended learning contributes to fulfilling that mission. Finally, adults can help to establish strong student-adult social contracts by highlighting any past school successes. Doing so may grant legitimacy to the school's promises and help to build trust among students that the school will make good on its promises (Hill et al., 1990; Bryk & Schneider, 2002).

Implications for school leaders. School-level practices highlighted in this research can help to strengthen the three components of internal accountability (Abelmann et al., 1999). Hiring for alignment to a clearly stated mission may build a teaching corps with strong, aligned senses of personal responsibility. Explicitly linking innovation and blended learning to the school's mission, and regular coaching and collaboration that roots conversations in school-wide expectations may help to establish

clear, common expectations among members of the school community. And modeling and showcasing innovation and technology use, emphasizing public practice, and regular teacher observations and follow-up feedback and coaching may constructively improve accountability in a school. These practices, along with consistently communicating a school mission that incorporates the use of personalized blended learning to meet a clear, shared goal may help to strengthen adult-administrator social contracts.

Implications for districts, CMOs, and broader oversight structures. Strong student-adult and teacher-administrator relationships and supports can be enabled by external structures. School-level autonomy over hiring enables intentional staffing, or hiring for "fit," (DeArmond et al., 2012; Lake et al., 2010), which may strengthen staff members' personal responsibility over their work and their school mission. Similarly, student choice allows families and students to select a school based on its stated mission and priorities, which helps individuals in a school community to be mission-aligned (Hill et al., 1990). Communication from the district or CMO about visions for blended learning and what the broader organization believes can be achieved through blended learning may also help schools to articulate these visions to staff members and may help individuals to understand blended learning and innovation as a mechanism for achieving the broader organizational goals. In addition, this research suggests that districts and CMOs may best provide support to schools through having slack capacity to respond to teacher and leaders' requests for support (and making this known to individuals in school sites).

Theoretical Implications

This study's findings generally support previous scholarship on organizational learning, as outlined in chapter 2. However, some theories about how school culture, structures, and oversight contexts might support innovation were unsupported. In addition, some unforeseen factors appear to contribute to organizational learning and the implementation of blended learning to personalize instruction in schools. This section reviews supported theory, unsupported or under-supported theory, and findings that may contribute to new theory on the use of innovative instructional practices in schools.

Supported components of my conceptual framework. This research provides support for several theories related to organizational learning and the broader literature on factors contributing to high schools' organizational health and effectiveness. Key theories supported here are that an innovative culture that values continuous improvement contributes favorably to organizational learning (Damanpour, 1991; Chandler, Keller, & Lyon, 2000, Zmud, 1984; Arad et al., 1997; Goh et al., 2006; McCharen et al., 2011; Leithwood et al., 1998), as does a habit of using data to monitor goals. Schools in which such cultures existed—oriented specifically around blended learning and innovation or otherwise— were more dynamic than the school where continuous improvement was not embedded in the culture.

Literature finding that leaders who articulate a clear vision and assists in setting group goals, convey high expectations for the community, provide support and reinforce of learning, encourage collaboration, and facilitate distributed leadership enable organizational learning (Leithwood et al., 1998; McCharen, Song & Martens, 2011; Higgins et al., 2011) also resonate with findings. Although I do not explicitly dedicate a section of my findings chapters to leadership practices and their impact on change, school

leadership clearly has a strong influence over these factors, which contribute to organizational learning.

This research also supports more general scholarship on effectiveness and organizational health in schools. For example, this research echoes findings from Abelmann et al.'s (1999) work on internal accountability, which points to the importance of personal responsibility, collective expectations, and accountability for adults in schools, and builds on this work, noting practices that may strengthen each component of internal accountability as it relates to personalized blended learning implementation. This research also largely supports findings from Hill et al.'s work (1990) on effective high schools, which points to school choice for students and teachers, accountability, strong social contracts, and a history of achievement as enablers of coherence. The research presented here, however, builds on Hill et al.'s idea of social contracts between students and adults, extending the theory to teachers and administrator and applying it to blended learning contexts.

This research's findings are also well-aligned to earlier findings related to resource allocation. This study echoes scholarship finding that high performing charter management organizations hire for "fit" and that this person-organization match reinforces focus and mission in school (DeArmond et al., 2012). Leadership at LCMOS and SCMOS very purposefully did such mission-focused hiring. The importance of allocating resources to high quality professional learning systems for organizational learning (Silins et al. 2002) is also supported by this research, which finds that high quality professional learning systems strengthens teacher-administrator social contracts, thereby enabling organizational learning and the implementation of personalized blended

learning. Finally, prior literature that has asserted the importance of blended learning resources and specialized knowledge (Murphy et al., 2014; Woodworth, Greenwald, Tyler, & Comstock, 2013) resonated here. As discussed, individuals at all profiled schools communicated the power of merely having blended learning tools (devices, sufficient bandwidth, etc.) and pointed to in-school specialists as key sources of professional learning.

Unsupported or under-supported components of my conceptual framework. As suggested by previous scholarship on innovation, this study revealed there to be some power in school's functionality as part of a network (Crossan & Apaydin, 1997)—both SCMOS and LCMOS had structures in which teachers from different schools in their network could communicate about blended learning implementation. But inter-school collaboration did not appear to be a central component of either school's blended learning work. Nor was inter-school collaboration a hallmark of any of the non-focal sites from large CMOs and districts in this study.

Similarly, economies of scale appeared to provide the CMO schools with some added capacity (this was also true in a non-focal school that operated in a large urban district context), as predicted in my conceptual framework (Bernatek, Cohen, Hanlon, & Wilka, 2012; Murphy et al., 2014). Especially at SCMOS, a central office provided key instructional supports that would likely not have existed if the school functioned as an independent school. But the benefits that accompanied economies of scale did not appear to extend past the added support of a district or regional office and appeared to interact strongly with other factors, most principally, schools' internal accountability for

innovation (Abelmann et al., 1999), and the strength of social contracts within the school (Hill et al., 1990).

This research also did not provide strong support for the theory of ambidextrous organization (O'Reilly & Tushman, 2004), as it relates to blended learning implementation. This work does not fully discredit the theory as applicable to the larger blended learning landscape, but the theory did not appear to be at play in the cases examined. LCMOS had an opportunity to act as an ambidextrous organization—with the profiled school only in its second year of operation, the school might have established itself around an innovative mission. However, higher priorities in the school (possibly related to the school's young age or established practices in the larger CMO) led school leadership to largely forego this opportunity. By contrast, SCMOS was over ten years old, but had established a culture that welcomed innovation and change.

This study also called to question how a culture that stresses discipline and a focus on student learning, which past literature has linked to CMO success (Whitman, 2008; Merseth et al. 2010), might interact with blended learning implementation. Establishing such a culture was clearly a priority at LCMOS and, as discussed, this priority crowded out innovation and the use of blended learning to personalize education. But having a disciplined, trusting culture with strong student-adult contracts was a key enabler of blended learning implementation in SCMOS. It is therefore unclear if LCMOS rightly prioritized establishing cultural expectations related to student conduct before focusing on blended learning implementation or if using blended learning to personalize learning may have helped to strengthen the culture and bring the school closer to achieving its goals.

Unforeseen factors contributing to personalized blended learning. This research found that one of the most important factors enabling personalized blended learning implementation is a clearly and consistently communicated vision for blended learning that articulates innovation and blended learning as a means for achieving an equally well-articulated organizational goal. Although many scholars have discussed the importance of a clear and coherent vision (Leithwood et al., 1998; Silins, Mulform, & Zarins, 2002; Goh et al., 2006; McCharen et al., 2011), this research suggests the importance of linking innovative practice to that organizational vision and helping members of the school community to understand how innovation can help schools to reach commonly understood goals.

I also found the strength and contents of student-adult social contracts to impact how teachers used blended learning. The conceptual framework I laid out in chapter 2 discusses the importance of student-adult social contracts (Hill et al., 1990), but I also found that student-adult social contracts, as they relate to blended learning, may be strengthened by explicit instruction on mindset and non-cognitive skills—a finding that is supported education psychology literature (Dweck, 2007)**.** I also find that social contracts between teachers and administrators may be important in implementing personalized blended learning. This finding builds on previous work discussing social contracts (Hill et al., 1990), explicitly pointing to strong teacher-administrator social contracts as a potentially important contributor to innovation and the successful implementation of personalized blended learning.

Finally, I find that school choice for teachers and students and a history of school success influenced the terms of student-adult social contracts in my three schools. These

conditions have been recorded elsewhere as contextual factors that potentially contribute to school coherence (Hill et al., 1990), but this study suggests that they may specifically support innovative education environments and personalized blended learning. These aspects of blended learning implementation merit further study.

Directions for Future Research

This research surfaced many emerging topics that are ripe for examination. I have highlighted some of these topics in my discussion of under-supported components of my conceptual frame and unanticipated factors that appear to have an impact on personalized blended learning implementation discussed above. I discuss others below.

One concept that was frequently discussed at SCMOS was "design thinking," or the cycle of discovery, interpretation, ideation, experimentation, and evolution (Design Thinking for Educators, "n.d."). Although design thinking and intentionality about school-embedded R&D embedded is becoming increasingly common in educators' practice, there is little research on the topic. Future research may explore conditions that enable and constrain the use of design thinking and the design process in schools, as well as design thinking's impact on instructional practice and student learning. Research on design thinking in schools may also look at how schools using design thinking compare in their use of personalized blended learning to schools that simply adopt a given program or blended learning model.

Future research may also examine a potential tension between teacher autonomy and efforts to create consistency within a school. Some teachers suggested that this tension existed at SCMOS—teachers valued their autonomy, but also recognized that

some consistency between classrooms in structures and online tools helped the school to operate smoothly. This tension and how schools can best navigate it deserves further study, especially in innovative environments.

Future research may also focus on how new schools, particularly those serving disadvantaged student populations, can best structure themselves to open with an innovation focus. LCMOS intended to open as an innovative, blended learning school, but these priorities quickly faded as the school dealt with the myriad challenges that arise during a school's first few years. What supports might help new schools to manage typical start-up challenges so that the community can take advantage of its *tabula rasa* status? What structures can best help innovative schools to replicate?

Finally, as previously discussed, although TPS and LCMOS were not using blended learning for personalized education as consistently as SCMOS, it is unclear if school leaders' decisions to implement blended learning slowly and less aggressively will result in successful implementation in the long-term. TPS leadership faced staff resistance to blended learning and LCMOS leadership intentionally allocated school resources to support the establishment of an orderly culture over deep blended learning implementation. Both of these factors constrained the use of blended learning for personalization during the course of the study, but it is not clear how the school leaders' implementation decisions will impact the use of blended learning in the schools long-term. Continued data collection from the sites in this study would help to inform the field of how implementation decisions in different contexts impact blended learning implementation in the short and long term.

Limitations to Findings

This research answers questions about what blended learning implementation looks like in three high schools and what factors enable and constrain how blended learning is used to personalize education in these settings. The study, however, cannot make claims about blended learning's impact on student learning in these three settings. Teachers and leaders in all three settings expressed positive perceptions of blended learning's impact on student learning, but without a student outcomes analysis it is impossible to say if perceptions match blended learning's true impact.

In addition, given each school's unique circumstances (history, staff, oversight capacity, etc.), it is impossible to make any claims about how the schools might look differently had their leadership taken a different approach to blended learning implementation. The approaches—both the form that blended learning took in the school and the community's implementation method— in the three schools were widely different and had different impacts on how commonly blended learning was used in classrooms to personalize education. But it is possible, for example, that LCMOS leadership's decision to slowly integrate blended learning into the school and TPS's decision to allow teachers to use blended learning according to their own interpretation and comfort level were appropriate decisions for the community and that decisions to make blended learning a central priority would have disrupted other fragile aspects of the school.

References

Abelmann, C., Elmore, R., Even, J., Kenyon, S. and Marshall, J. (1999). When accountability knocks, will anyone answer? CPRE Research Series, University of Pennsylvania Graduate School of Education, Philadelphia, PA. Retrieved from http://www.tc.columbia.edu/ncrest/hatch/Elmore.pdf

AFT (n.d.) Charter Schools. Retrieved from http://www.aft.org/issues/schoolchoice/charters/ on 5.29.14.

Allen, J. & Consoletti, A. (2008). *Annual Survey of America's Charter Schools.* Washington, D.C.: Center for Education Reform.

Alliance College-Ready Public Schools (n.d.) *Blended for Alliance School Transformation (BLAST).* Retrieved from http://www.laalliance.org/apps/pages/index.jsp?uREC_ID=191024&type=d&pREC_ID=395157&hideMenu=1 on 7.4.14.

Anderson, S.E. (1997). Understanding teacher change: Revisiting the concerns based adoption model. *Curriculum Inquiry.* 27(3). Pp. 331-367.

Angrist, J. D., Pthak, P. A., Walters, C. R., (2011). *Explaining charter school effectiveness. National Bureau of Economic Research.* Working Paper 17332. http://www.nber.org/papers/w17332. Retrieved on 10.12.11.

Arad, S., Hanson, M. A., & Schneider, R. J. (1997). A framework for the study of relationships between organizational characteristics and organizational innovation. *Journal of Creative Behavior.* 31(1) 42-58.

Arbelaiz, A. M. & Correa Gorospe, J. M. (2009). Can the grammar of schooling be changed? *Computers and Education.* (53) 51-56.

Argyris, C. & Schon D. (1996). *Organizational Learning II: Theory, Method, and Practice,* Vol. 1. Boston, MA: Addison-Wesley.

Arnett, T. (2014). "Computers enable good teaching." Clayton Christensen Institute for Disruptive Innovation. Retrieved from http://www.christenseninstitute.org/computers-enable-good-teachers/ on 7.15.14.

Aspire Public Schools (2013). *Blended Learning 101Handbook.* Retrieved from http://aspirepublicschools.org/media/filer_public/2013/07/22/aspire-blended-learning-handbook-2013.pdf on 7.4.14.

Baily, D. B. & Palsha, S. A. (1992). Qualities of the stages of concern questionnaire and implications for educational innovations. *The Journal of Educational Research.* 85, pp 226-232.

Bailey, J., Owens, D., Schneider, C., Vander Ark, T., & Waldron, R. (2014). *Smart Series: Guide to Edtech Procurement.* Washington, DC: Digital Learning Now. Retrieved from

http://digitallearningnow.com/site/uploads/2014/05/Procurement-Paper-Final-Version.pdf on 5.7.15.

Baker, D. (1992). The politics of American Catholic school expansion, 1870-1930. In B. Fuller & R. Rubinson (Eds.) *The Political Construction of Education: The State, School Expansion, and Economic Change* pp. 189-206. New York: Praeger.

Beatty, P. C. & Willis, G. B. (2007). Research synthesis: The practice of cognitive interviewing. *Public Opinion Quarterly.* 71(2) 287-311.

Berends, M, Bodilly, S. and Nataraj Kirby, S. (2002) *Facing the Challenges of Whole-School Reform: New American Schools After a Decade*. Santa Monica, RAND

Berthon, P. Ewing, M., Ha, L. L. (2005). Captivating company: Dimensions of attractiveness in employer branding. *International Journal of Advertising.* 24(2) 151-172.

Betts, J. and Tang, E. Y. (2011). *The effect of charter schools on student achievement: A meta-analysis of the literature.* Seattle, WA: University of Washington Center on Reinventing Public Education.

Bernatek, B. Cohen, J. Hanlon, J. Wilka, M. (2012). "Blended Learning in Practice: Case Studies from Leading Schools, Summit Public Schools." The Michael and Susan Dell Foundation. Retrieved from http://5a03f68e230384a218e0-938ec019df699e606c950a5614b999bd.r33.cf2.rackcdn.com/Blended_Learning_Summit_083012.pdf on 2/28/14.

Bill & Melinda Gates Foundation. (n.d.) "Next generation learning challenges seeks promising tools that can help students get ready for college." Retrieve from http://www.gatesfoundation.org/Media-Center/Press-Releases/2011/01/Next-Generation-Learning-Challenges-Seeks-Promising-Tools-That-Can-Help-Students-Get-Ready-For-College on 2/18/14.

Birman, B. F., Desimone, L., Garet, M. S., & Porter, A. C. (2000) Designing professional development that works. *Educational Leadership*. 57(8) 28-33.

Blended Learning Universe. (n.d.) Clayton Christensen Institute for Disruptive Innovation. http://www.christenseninstitute.org/blended-learning-universe/ Retrieved 5.15.15.

Bloom, P. N. & Chatterji, A. K. (2009). Scaling social entrepreneurial impact. *California Management Review. 51(3) 114-133.*

Bloom, H. & Unterman, R. (2013) Sustained Progress: New Findings About the Effectiveness and Operation of Small Public High Schools of Choice in New York City: MDRC.

Brewer, D. J. & Ahn, J. (2010) What do we know about teachers in charter schools? in *Taking Measure of Charter Schools.* Julian R. Betts & Paul T. Hill (Eds.)

Bryk, A. S. & Schneider, B. (2002). *Trust in Schools: A Core Resource for Improvement.* Russell Sage: New York.

Burian-Fitzgerald, Luekens, M.T. & Strizek, G.A. (2003). "Less red tape or more green teachers: Charter school autonomy and teacher qualifications" in Bulkley, K. E. & Wohlstetter, P.(Eds.) Taking Account of Charter Schools: What's Happened and What's Next? New York: Teachers College Press.

Cable, D. M. & Judge, T. A. (1996). Person-organization fit, job choice decisions, and organizational entry. *Organizational Behavior and Human Decision Processes.* 67(3) 294-311.

California Department of Education School Report Card. Retrieved from http://www.cde.ca.gov/TA/ac/sa/ on 5.12.15.

Campbell, C. & Gross, B. (2008). Working without a safety net: How charter school leaders can best survive on the high wire. Seattle, WA: University of Washington Center on Reinventing Public Education.

Carter, S. C. (2000). *No Excuses: Lessons from 21 high-performing, high-poverty schools.* Washington DC: The Heritage Foundation;

Center for Education Reform. (n.d.) "Laws and Legislation." Retrieved from http://www.edreform.com/issues/choice-charter-schools/laws-legislation/ on 2.20.14.

Center for Education Reform (2014). "The Facts about Digital and Blended Learning." Retrieved from https://www.edreform.com/wp-content/uploads/2014/02/DigitalLearningToolkit2014.pdf on 3.2.15.

Center for Research on Education Outcomes (CREDO). (2009). *Multiple choice: Charter school performance in 16 states.* Stanford, CA: Stanford University.

Chadwick, C. & Kowal, J. (2011). *Preparing for growth: Human capital innovations in charter public schools.* Center for American Progress & Public Impact.

Chandler, G., Keller, C. & Lyon, D. (2000). Unraveling the determinants and consequences of an innovation-supportive organizational culture. *Entrepreneurship Theory and Practice*, 4, 59-76.

Charter School Growth Fund (n.d.) "Investing in CMOs" Retrieved from http://chartergrowthfund.org/what-we-do/investing-in-cmos/ on 10.9.14.

Chatman, J. A. (1991). Matching people and organizations: Selection and socialization in public accounting firms. *Administrative Science Quarterly*, 36, 459 – 484

Childress, S., Elmore, R., Grossman, A., & King, C. (2007). *Note on the PELP coherence framework.* Boston: Harvard Business School.

Christensen, C. (2006). *The innovator's dilemma: The revolutionary book that will change the way you do business.* New York: Collins Business Essentials.

Christensen, C. M., Horn, M. B. & Johnson, C. W. (2008). *Disrupting class: How disruptive education will change the way the world learns.* New York, McGraw Hill.

Christensen, C. M., Horn, M. B. & Staker, H. (2013). *Is K-12 learning disruptive?: An introduction to the theory of hybrids.* Clayton Christensen Institute for Disruptive Innovation: San Mateo, CA.

Chubb, J. E. & Moe, T. M. (1988). Politics, markets, and the organization of schools. *American Political Science Review.* 82(4), 1065-1087.

Chubb, J. & Moe, T. (1990). *Politics, markets, and America's schools.* Washington, DC: The Brooking Institution.

Cheung ,D., Hattie, J., & Ng, D. (2001). Reexamining the stages of concern questionnaire: A test of alternative models. *The Journal of Educational Research.* 94(4). Pp 226-236.

City, E., Elmore, R., Fiarman, S., & Teitle, L. (2009). *Instructional rounds in education: A network approach to improving teaching and learning.* Cambridge, MA: Harvard Education Press.

Cohen, C. (2013). *"According to His way": Blended learning.* Boston, MA: Jewish Day School Affordability Knowledge Center. Retrieved from http://peje.org/old/images/pdfs/blendedlearningwhitepaper.pdf on 7.9.14.

Cohen, D. K. & Ball, D. L. (1990). Policy and practice: An overview. *Educational Evaluation and Policy Analysis.* (12) 233-239.

Cohen, D. K, Peurach, D. J., Glazer, J. L., Gates, K. E., & Goldein, S. (2014) *Improvement by Design: The Promise of Better Schools.* Chicago: The University of Chicago Press.

Creswell, J. W. & Plano Clark, V. L. (2011). *Designing and Conducting Mixed Methods Research.* Thousand Oaks, CA: SAGE Publications, Inc.

Crossan, M. M. & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies.* 47(6) 1154- 1191.

Cuban, L. (1993) *How teachers taught: Constancy and change in American classrooms 1880-1990.* Second Edition. New York, NY: Teachers College Press.

Cuban, L. (2001). Oversold and underused: Computers in the classroom. Cambridge, Massachusetts: Harvard University Press.

Cullingford, C., & Haq, N. (2009). *Computers, schools and students: The effects of technology.* Surrey, England: Ashgate Publishing Ltd.

Davies, S. & Quirke, L. (2005). Innovation in educational markets: An organizational analysis of private schools in Toronto. *Journal of Catholic Education.* 8(3).

DelVecchio, D., Jarvis, C.B., Klink, R.R. & Dineen, B.R. (2007). Leveraging brand equity to attract human capital. *Marketing Letters: A Journal of Research in Marketing.* Retrieved from http://eres.lndproxy.org/edoc/FacPubs/loy/KlinkR/LeveragingBrandEquity-07.pdf on 12.5.12.

Daft, R. L. (1978). A dual-core model of organizational innovation. *Academy of Management Journal.* (21) 193-210.

Damanpour, F. (1991). Organizational innovation: A Meta-analysis of effects of determinants and moderators. *Academy of Management Journal.* 34(3). 555-590.

Damanpour, F. (2010). An integration of research findings of effects of firm size and market competition on product and process innovations. *British journal of Management.* (21) 996-1010.

Darling-Hammond, L., Ancess, J., & Wichterle Ort, S. (2002). Reinventing High School: Outcomes of the Coalition Campus Schools Project. *American Educational Research Association.* 39(3) 639-673.

DiMaggio, P. & Powell, W. (1983). "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review*. 48(2). 147-60.

District Reform Support Network. "Personalized Learning in Progress: Case Studies of Four Race to the Top- District Grantees' Early Implementation." Retrieved from http://learningaccelerator.org/media/ab304e1c/PERSONALIZED%20LEARNING%20IN%20PROGRESS.pdf on 3.2.15.

DeArmond, M., Gross, B., Bowen, M., Demeritt, A. & Lake, R. (2012). Managing talent for school coherence: Learning from charter management organizations. Seattle, WA: University of Washington Center on Reinventing Public Education. Retrieved from http://www.crpe.org/sites/default/files/pub_cmo_managingtalent_may12.pdf on 2/18/14.

Design Thinking for Educators. "What is design thinking?" Retrieved from http://www.designthinkingforeducators.com/design-thinking/ on 5.19.15.

Dobbie, W. & Fryer, R. (2011). *Getting beneath the veil of effective schools: Evidence from New York City.* NBER working paper No. 17632.

Doyle, D. & Locke, G. (2014). Lacking leaders: The challenges of principal recruitment, selection, and placement. Washington DC: Public Impact and The Thomas Fordham Institute.

Dweck, C. S. (2007). *Mindset: The New Psychology of Success: How we can Learn to Fulfill our Potential.* New York: The Random House Publishing Group.

Edmonds, R. (1979). Effective schools for the urban poor. *Educational leadership.* 37(1), pp. 15-18, 20-24.

EdSource. *Selected Charter School Laws and Policies.* http://www.edsource.org/iss_charter_laws.html. Accessed 2.13.14.

Ellison, S. & Locke, G. (2014). Breakthroughs in time, talent, and technology: Next generation learning models in public charter schools. Washington DC: Public Impact and National Alliance for Public Charter Schools. Retrieved from http://www.publiccharters.org/wp-content/uploads/2014/09/NAPCS-NextGen-Report-DIGITAL.pdf.

Elmore, R. F. (1995). Teaching, learning and school organization: Principles of practice and the regularities of schooling. *Educational Administration Quarterly, 31,* 355-374.

Elmore, R.F. & Burney, D. (1999). "Investing in Teacher Learning: Staff Development and Instructional Improvement" in *Teaching as the Learning Profession: Handbook of Policy and Practice.* Darling-Hammond, L and Sykes, G. (Eds.). San Francisco: Jossey-Bass.

Elmore, R. (2006). *School Reform from the Inside Out.* Cambridge, MA: Harvard Education Press.

Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development.* 53(4), 25-29.

Ertmer, P. A. & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education.* 42(3). 255- 284.

European Network for Rural Development. "The Strategy Design: What is Innovation?" Retrieved from http://enrd.ec.europa.eu/leader/leader/leader-tool-kit/the-strategy-design-and-implementation/the-strategy-design/en/what-is-innovation_en.cfm on 5.23.14.

Farrell, C. C. (2012). Designing schools systems to encourage data use and instructional improvement: A comparison of educational organizations. Dissertation presented to faculty at the University of Southern California.

Farrell, C., Nayfack, M. B., Smith, J., Wohlstetter, P., & Wong, A. (2009). Scaling up charter management organizations: Eight lessons for success. National Resource Center on Charter School Finance and Government.

Ferguson, J., Gill, B., Haimson, J., Killewald, A., McCullough, M., Nicols-Barrar, I., Teh, B., Verbitzsky-Savitz, N., Bowen, M., Demerritt, A., Hill, P., Lake, R. (2012). *Charter school management organizations: Diverse strategies and diverse student impacts.* Mathematica Policy Research and The Center on Reinventing Public Education. Retrieved from http://www.crpe.org/publications/charter-school-management-organizations-diverse-strategies-and-diverse-student-impacts on 3.3.15.

Fernandez, R. & Rogerson, R. (2003) "School vouchers as a redistributive device: An analysis of three alternative systems" in Hoxby, C. M. (Ed.) The Economics of School Choice. (pp. 195-226) University of Chicago Press: Chicago, IL.

Frank, K. A., Penuel, W. R., Sun, M., Kim, C. M., & Singleton, C. (2013). The organization as a filter of institutional diffusion. *Teachers College Record.* 115(1) 1-33.

Frank, K. A., Zhao, Y., & Borman, K. (2004). Social capital and the diffusion of innovations within organizations: The case of computer technology in schools. *Sociology of Education.* 77, 148-171.

Friedman, I. (1991). High and low-burnout schools: School culture aspects of teacher burnout. *Journal of Educational Research,* 85(5) 325-333.

Frank, K. A., Penuel, W. R., Sun, M., Kim, C. M., & Singleton, C. (2013). The organization as a filter of institutional diffusion. *Teachers College Record.* 115(1) 1-33.

Frank, K. A., Zhao, Y., & Borman, K. (2004). Social capital and the diffusion of innovations within organizations: The case of computer technology in schools. *Sociology of Education.* 77, 148-171.

Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity.* New York: Free Press Paperbacks

Gleason, P., M, Clark Tuttle, C. and Dwoyer, E. (2010). *The evaluation of charter school impacts: Final Report.* NCEE 2010-4029. Washington, D.C.: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Goh, S., Cousins, J.B. & Elliot, C. (2006). Organizational learning capacity, evaluative inquiry and readiness for change in schools: views and perceptions of educators. *Journal of Educational Change.* 7(4) 289-318.

Goldhaber, D. D., Hannaway, J. (Eds.) (2009). Creating a New Teaching Profession. Washington DC: Urban Institute Press.

Goossen, R. J. (n.d.) "Peter Drucker: The Drucker Legacy on Innovation and Entrepreneurship." Retrieved from http://www.eleaders.org/downloads/sb_eleaders/entrepreneurialexpertpeterdrucker.pdf on 5.23.14.

Gross, B. (2011). Inside Charter Schools: Unlocking Doors to Student Success. Seattle, WA: University of Washington Center on Reinventing Public Education.

Gross, B. & DeArmond, M. (2011). *Issue Brief: How do charter schools get the teachers they want?* National Alliance for Public Charter Schools.

Hall, G. E. (2010). Technology's Achilles hell: Achieving high-quality implementation. *Journal of Research on Technology in Education.* 42(3) 231-253.

Hall, G. E., George, A. A. & Rutherford, W. L. (1977). *Measuring stages of concern about the innovation: A manual for use of the SoC questionnaire.* Austin: Research and Development Center for Teacher Education. University of Texas.

Hall, G. E. & Loucks, S. F. (1977). A developmental model for determining whether the treatment is actually implemented. *American Education Research Journal.* 14(3) 263-276.

Hall, G. E. & Hord, S. M. (2011). Implementing Change: Patterns, Principles and Potholes (3rd Ed.). Boston, MA: Pearson.

Hallinger, P. (2005). Instructional leadership and the school principal: A passing fancy that refuses to fade away. *Leadership and policy in schools.* 4 (pp. 221-239).

Hannan, M. T. & Freeman, J. (1984). Structural inertia and organizational change. *American Sociological Review.* 49(2). 149-164.

Haq, N. (2006). Pupils' views and experience of ICT in secondary schools. Doctoral thesis, University of Huddersfield. Retrieved from http://eprints.hud.ac.uk/5968/ on 2.16.13.

Hassel, B. C., Hassel, E. A, & Barrett, S. K. (2013). Staffing design: The missing key to teacher quality 2.0. Washington D.C.: AEI. Retrieved from http://www.aei.org/files/2013/09/09/-hess-hasseletal-tq-20-paper_105036473693.pdf on 2.28.14.

Hazzan, O. (2003). Prospective high school mathematics teachers' attitudes toward integrating computers in their future teaching. *Journal of Research on Technology in Education.* (35) 213-246.

Henig, J. R. (2008). *What do we know about the outcomes of KIPP schools?* East Lansing, MI: Great Lakes Center for Education Research and Practice.

Hennessy, S., Ruthven, K., & Brindley, S. (2005). Teacher perspectives on integrating ICT into subject teaching: Commitment, constrainsts, caution, and change. *Journal of Curriculum Studies.* (37) 155-192.

Herold, B. (2014). "Growing pains for Rocketship's blended-learning juggernaut." *Education Week.* Retrieved from http://www.edweek.org/ew/articles/2014/01/21/19el-rotation.h33.html?tkn=NPRF9F5KdlN8pUl+Rv9+pvv1BtaM7QtJ4MRw on 2.7.14.

Herzberg, F. (1968). One more time: How do you motivate employees? *Harvard Business Review.* Retrieved from http://synchronit.com/downloads/freebooks/herzberg.pdf on 5.12.15.

Hew, K. F. & Brush, T. (2007). Integrating technology into k-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research and Development.* 55, 223-252.

Higgins, M., Ishimaru, A., Holcombe, R., & Fowler, A. (2011). Examining organizational learning in schools: The role of psychological safety, experimentation, and leadership that reinforces learning. *Journal of Educational Change.* (13) 67-94.

Hill, P. T., Campbell, C., & Harvey, J. (2000). Chapter 1: The realities of urban school reform. In Authors, *It takes a city: Getting serious about urban school reform* (pp. 7-25). Washington DC: The Brookings Institution Press.

Hill, P. T. & Celio, M., B. (1998). Chapter 3: Beneath the surface: Theories of action. In Authors, *Fixing urban schools* (pp. 13- 26). Washington DC: The Brooking Institution Press

Hill, P. T., Foster, G. E. & Gendler, T. (1990). High Schools with Character. Washington DC: RAND.

Hill, P. T. & Lake, R. (2007). Charter school governance. In Berends, M., Springer, M. G., & Walberg, H. J. (Eds.) *Charter school outcomes.* Washington D.C.: National Center on School Choice

Hill, P. T. & Maas, T. (2015). "The Case for Coherent High Schools." Seattle, WA: The Center on Reinventing Public Education.

Hodas, S. (2015) "Redesigning the district operating system." Seattle, WA: The Center on Reinventing Public Education. Retrieved from http://www.crpe.org/publications/redesigning-district-operating-system on 5.20.15

Honig, M. I. (2008). District central offices as learning organizations: How sociocultural and organizational learning theories elaborate district central office administrators' participation in teaching and learning improvement efforts. *American Journal of Education,* 114, 627–664.

Honig, M. I. (2012). District central office leadership as teaching: How central office administrators support principals' development as instructional leaders. *Educational Administration Quarterly.* 48(4) 733-774.

Honig, M. I., Copland, M., Rainey, L., Lorton, J. & Newton, M. (2010). *Central office transformation for district-wide teaching and learning improvement*. Seattle: University of Washington, Center for the Study of Teaching and Policy.

Honig M.I. & Rainey, L. (2013). Central office leadership in principal professional learning communities: The practice beneath the policy. *Teachers College Record.* 116(4). 1-48.

Horn, M., Greenberg, B. (2013). Blended Learning: Personalizing Learning for Students. Coursera. Retrieved from https://class.coursera.org/blendedlearning-001 on 2/18/14

Horn, M. B. & Staker, H. (2011). *The Rise of K-12 Blended Learning.* Innosight Institute. Retrieved from http://www.innosightinstitute.org/innosight/wp-content/uploads/2011/01/The-Rise-of-K-12-Blended-Learning.pdf on 2.15.13.

Horn, M. B. & Staker, H. (2014). *Blended: Using Disruptive Innovation to Improve Schools.* San Francisco: Jossey-Bass.

Horn, M. & Maas, T. (2013). *Innovating at last? The rise of blended learning in charter schools.* In Lake, R. J. (Ed.) *Hopes, Fears and Reality: A balanced look at American charter schools in 2012.* Seattle, WA: Center on Reinventing Public Education and The University of Washington.

Hoxby, C. M., Murarka, S. and Kang, J. (2009). *How New York City's charter schools affect achievement.* Cambridge, MA: New York City Charter Schools Evaluation Project.

Ichniowski, C., & Shaw, K. (2003). Beyond incentive pay: Insiders' estimates of the value of complementary human resource management practices. *The Journal of Economic Perspectives.* 17(1) 155-178.

Ingersoll, R. (2004). *Why do high-poverty schools have difficulty staffing their classrooms with qualified teachers?* [A joint initiative of the Center for American Progress and the Institute for America's Future. Renewing Our Schools, Securing Our Future]. November 19, 2004. Washington, DC: Center for American Progress.

Jon-Chao, H., Chan-Jer, H., Chien-Yun, D., Ming-Yueh, H., Pei-Hsin, L., Lee, C. (2012) Technology anxiety and implicit learning ability affect technology leadership to promote the use of information technology at elementary schools. *Procedia- Social and Behavioral Sciences.* 64(9) 555-563.

Kanter, R. M. (1983). *The change masters: Innovation for productivity in the American corporation.* New York: Simon and Schuster.

Kaplan, R. & Leonard, H. (2005). *Aligning mission, support and capacity in public sector programs (draft)*. Cambridge, MA: Harvard University Press.

Keedy, J., & Allen, J. (1998). Examining district norms from a rural school's site-based improvement perspective: Complementary or constructive? *Journal of School Leadership*, 8 (2), 187-210.

Kember, D. & Mezger, R. (1990). The instructional designer as a staff developer: A course team approach consistent with the Concerns-Based Adoption Model. *Distance Education.* 11(1) pp. 50-70.

Kennedy, S. & Soifer, D. (2013). *Why blended learning can't sit still: A commitment to constant innovation is needed to realize the potential of individualized learning.* Lexington Institute. Retrieved from http://www.lexingtoninstitute.org/library/resources/documents/Education/WhyBlendedLearningCantStandStill.pdf on 2.7.14.

KIPP: Columbus. *KIPP: Columbus Joins the Ohio Blended Learning Network.* Retrieved from http://kippcolumbus.org/stories/general/kipp-columbus-joins-the-ohio-blended-learning-network/ on 2.13.14.

KIPP. (n.d.) *KIPP through college.* Retrieved from http://www.kipp.org/ktc on 2.13.14.

Labaree, D. (2007). *Limits on the impact of educational reform: The case of Progressivism and US schools, 1900- 1950.* Retrieved from http://www.stanford.edu/~dlabaree/publications/Monte_Verita_Paper.pdf on December 5, 2012.

Lake, R., Dusseault, B., Bowen, M., Demeritt, A. & Hill, P. (2011).The national study of Charter management organization (CMO) effectiveness executive summary. Seattle, WA: Mathematica Policy Research and University of Washington Center on Reinventing Education. p. 1

Land, S. M. & and Hannafin, M. J. (1997) The Foundations and Assumptions of Technology-Enhanced Student-Centered Learning Environments, *Instructional Science* 25(3) 167-202.

Leithwood, K., Leonard, L., & Sharratt, L. (1998). Conditions fostering organizational learning in schools. *Educational Administration Quarterly.* 34(2) 243-276.

Levin, H. & Belfield, C. R. (2003). Chapter 6: The marketplace in education. *Review of Research in Education.* 27(1) 183-219.

Levin, J. & Quinn, M. (2003). Missed opportunities: How we keep high-quality teachers out of urban classrooms. New York: New Teacher Project.

Lezotte, L. W. (1991). *Correlates of effective schools: The first and second generation.* Okemos, MI: Effective Schools Products, Ltd. http://a2skyline.org/skyline.home/files/correlates.pdf. Retrieved on 10/22/11.

Lieberman, A. (Ed.). (1995). *The work of restructuring schools: Building from the ground up.* New York: Teachers College Press.

Loeb, S., & Beteille, T. (2009). Teacher quality and teacher labor markets. In G. Sykes, B. Schneider & D. N. Plank (Eds.), *Handbook of Education Policy Research* (pp.596-612). - See more at: http://cepa.stanford.edu/content/teacher-quality-and-teacher-labor-markets#sthash.6a5fMtFF.dpuf

Loeb, S., Valant, J., & Kasman, M. (2011). Increasing choice in the market for schools: Recent reforms and their effects on student achievement. *National Tax Journal.* 64(1), 141-164.

Long, J. S. (2007) Regression Models for Categorical and Limited Dependent Variables. Thousand Oaks, CA: SAGE Publications.

Lortie, D. C. (1975). *Schoolteacher: A Sociological Study.* Chicago, IL: University of Chicago Press.

Louis, K. S. (2006). Changing the culture of schools: Professional community, organizational learning and trust. *Journal of School Leadership.* 16(4) 477-489.

Louis, K.S., Leithwood, K., Wahlstrom, K., & Anderson, S. (2010). *Investigating the links to improved student learning: Final report of research findings.* New York: The Wallace Foundation. www.wallacefoundation.org/knowledge-center/school-leadership/key-research/Pages/Investigating-the-links-to-Improved-Student-Learning.aspx

Loveless, T. (1996). Why aren't computers used more in schools? *Educational Policy.* 10(4), 448-467.

Lubienski, C. (2003). Innovation in education markets: Theory and evidence on the impact of competition and choice in charter schools. *American Educational Research Journal.* 40(2), 395-443.

Lynch, L. M. (2007). The adoption and diffusion of organizational innovation: Evidence for the U.S. economy. Working Paper 13156. NBER Working Paper Series.

Maas, T. & Lake, R. (2015). How to remove barriers to effective and adaptable school district procurement. Seattle, WA: University of Washington Center on Reinventing Public Education. Retrieved from http://www.crpe.org/sites/default/files/crpe-report-effective-adaptable-school-district-procurement_0.pdf on 3.2.15.

Marsh, C. (1987). Implementation of a social studies curriculum in an Australian elementary school. *Elementary School Journal.* 87(4) Pp. 476-486.

Martins, E. & Martins, N. (2002). An organizational culture model to promote creativity and innovation. *Journal of Industrial Psychology.* UNSIA: South Africa.

McCharen, B., Song, J., & Martens, J. (2011). School innovation: The mutual impacts of organizational learning and creativity. *Educational Management Administration & Leadership.* 39(6) 676-694.

Martins, E. & Martins, N. (2002). An organizational culture model to promote creativity and innovation. *Journal of Industrial Psychology.* UNSIA: South Africa.

McCharen, B., Song, J., & Martens, J. (2011). School innovation: The mutual impacts of organizational learning and creativity. *Educational Management Administration & Leadership.* 39(6) 676-694.

McShane, M. Q. (2012). Moving from school systems to a system of schools. *Education Next.* Retrieved from http://educationnext.org/moving-from-a-school-system-to-a-system-of-schools/ on 5.29.14.

Mead, S. & Rotherham, A. J. (2007). A Sum Greater than Its Parts: What States Can Teach Each Other About Charter Schooling. *Education Sector*. Retrieved from

http://www.educationsector.org/sites/default/files/publications/CharterSchoolSummary.pdf on 2.14.12.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation. Second edition.* San Francisco, CA: Jossey-Bass Inc.

Merseth, K., Cooper, K., Roberts, J., Tieken, M. C., Valant, J. 7 Wynne, C. (2010). *Inside urban charter schools: Promising practices and strategies in five high-performing schools.* Cambridge, MA: Harvard Education Press.

Miles, M. B. & Huberman, A. M. (1994). *Qualitative data analysis* (2nd Ed.). Thousand Oaks, CA: Sage Publications.

Milpitas Unified School District. "Blended Learning: Beyond Using Technology." Retrieved from http://www.musd.org/blended on 3.2.15.

Moe, T. M. (2011). Special Interest: Teachers Unions and America's Public Schools. Washington, DC: The Brookings Institution.

Morris, M. H., Kuratko, D. F., Covin, J. G. (2011). *Corporate Entrepreneurship and Innovation, Third Edition.* Mason, OH: South Western Engage Learning.

Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. *Nursing Research, 40,* 120-123.

Mead and A. J. Rotherham, (2007). *A Sum Greater than Its Parts: What States Can Teach Each Other About Charter Schooling*. Washington, D.C.: Education Sector. http://www.educationsector.org/sites/default/files/publications/CharterSchoolSummary.pdf.

Meyer, A. D., Brooks, G. F., & Goes, J. B. (1990). Environmental jolts and industry revolutions: Organizational responses to discontinuous change. *Strategic Management Journal.* (3) 1-24.

Mishra, P., & Brewer, W. F. (2003). Theories as a form of mental representation and their role in the recall of text information. *Contemporary Educational Psychology*, 28(3), 277-303

Mulford, W.R. (1998). Organizational learning and educational change. In: Hargreaves, A., Liebermann, A., Fullan, M. & Hopkins, D. (eds). *International Handbook of International Change.* London: Kluwer Academic, pp. 616-636.

Murphy, R., Snow, E., Mislevy, J., Gallagher, L., Krumm, A., & Wei X. (2014). *Blended Learning Report.* Menlo Park, CA: SRI International.

Myung, J., Loeb, S., & Horng, E. L. (2011). Tapping the principal pipeline: Identifying talent for future school leadership in the absence of formal succession management programs. *Educational Administration Quarterly.* 47(5). 695-727.

National Council on Teacher Quality (2010). Bumping HR: Giving principals more say over staffing. Retrieved from http://www.nctq.org/dmsView/Bumping_HR_Giving_Principals_More_Say_Over_Staffing_NCTQ_Report on 10.10.14.

National Resource Center on Charter School Finance and Governance. (2008). *Creating and sustaining high-quality charter school governing boards: A guide for state policymakers.* Retrieved from http://www.charterresource.org/files/Governing_Board_v3.pdf.

Newmann, F. M. (1996) *Authentic Achievement: Restructuring Schools for Intellectual Quality* San Francisco: Jossey-Bass Publishers.

Newmann, F.M., King, M.B., & Rigdon, M. (1997). Accountability and school performance: Implications for restructuring schools. *Harvard Education Review.* 61(7) 41-74.

Ni, Y. (2012). Teacher working conditions in charter schools and traditional public schools: A comparative study. *Teachers College Record.* (114) 1-26.

O'Connell, A. (2007). "What Does *Getting Results* Say about Implementing Programs with Fidelity?" Sacramento, CA: California Department of Education. Retrieved from http://www.cde.ca.gov/ls/he/at/documents/grfactsheet10.pdf on 3.2.15.

Opfer, D. & Pedder, D. (2011). Conceptualizing teacher professional learning. *Review of Educational Research.* (81) 376-407.

O'Reilly, C. A., III, & Tushman, M. L. (2004). The ambidextrous organization. *Harvard Business Review, 82*(4), 74-81.

Orlando, J. (2009). Understanding changes in teachers' ICT practices: A longitudinal perspective. *Technology, Pedagogy and Education.* 18(1) pp 33-44.

Oser, S. (1995). *Strategic management for nonprofit organizations: Theory and cases.* New York: Oxford University Press.

Pane, J. F., Griffin, B. A., McCaffrey, D. F., Karam, R., Daughtery, L., & Phillips, A. (2013). Does an algebra course with tutoring software improve student learning? Washington DC: RAND Corporation.

Panel on Educational Technology, President's Committee of Advisors on Science and Technology. (1997, March). *Report to the President on the use of technology to strengthen K-12 education in the United States*. Retrieved from http://www.agiweb.org/hearings/pcastedu.html on 3.2.13.

Patton, M. (2002). *Qualitative research and evaluation methods.* Thousand Oakes, CA: SAGE.

Paulson, A. (2014). "Blended Learning Revolution: Tech Meets Tradition in the Classroom." *The Christian Science Monitor.* Retrieved from http://www.csmonitor.com/USA/Education/2014/0420/Blended-learning-revolution-Tech-meets-tradition-in-the-classroom on 3.2.15.

Peltason, E. H., Raymond, M. E. (2013). *Charter school growth and replication. Volume I.* Center for Research on Education Outcomes. Accessed from http://credo.stanford.edu/pdfs/CGAR%20Growth%20Volume%20I.pdf on 2.15.13.

Pennsylvania Department of Education. Academic Achievement Report 2011-12. Retrieved from http://paayp.emetric.net/ on 5.12.15.

Peterson, K. & Deal, T. (1999). *Shaping school culture: The heart of leadership.* San Francisco: Jossey-Bass.

Podgursky, M. & Ballou, D. (2001). Personnel policy in charter schools. Washington DC: Thomas B. Fordham Foundation. Retrieved from http://web.missouri.edu/~podgurskym/articles/files/personnel_policy_charter_schools.pdf on 2.15.14.

Preston, C., Goldring, E., Berends, M., Cannata, M. (2012). School innovation in district context: Comparing traditional public schools and charter schools. *Economics of Education Review.* 31, 318-330.

Protheroe, N. (2008). "The Impact of Fidelity of Implementation in Effective Standards-Based Instruction." National Association of Elementary School Principals. Retrieved from http://www.naesp.org/resources/1/Principal/2008/S-O_p38.pdf on 3.2.15.

Public Education Leadership Project at Harvard University. (n.d.) Retrieved from http://pelp.fas.harvard.edu/book/coherence-framework on 2.20.14.

Purkey, S. C. & Smith, M. S.. (1983). Effective schools: A review. *The Elementary School Journal, 83(4).* pp. 426-452.

Ravitch, D. (2010). *The Death and Life of the Great American School System: How Testing and Choice area undermine education.* Philadelphia: Basic Books.

RELAY Graduate School of Education (n.d.) http://www.relay.edu/history/

Rice, G. (June, 20, 2013). Activate helps prepare Summit Public Schools prepare self-directed, college-ready students. Activate Instruction. Retrieved from http://www.activateinstruction.org/story/activate-helps-summit-public-schools-prepare-self-directed-college-ready-students/ on 2.28.14.

Ries, E. (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses.* New York: Crown Publishing Group.

Rivkin, S., Hanushek, E., & Kane, T. J. (2005). Teachers, schools, and academic achievement. *Econometrica, 73(2),* 417-458

Rockoff, J. E. (2004). The impact of individual teachers on student achievement: evidence from panel data. *American Economic Review, 94(2),* 247-252.

Roderick, M. (2006). Closing the aspirations-attainment gap: Implications for high school reform. Commentary from Chicago. San Diego, CA: MDRC.

Rodriguez, G. & Knuth, R. (2000). *Critical issue: Providing professional development for effective technology use.* Retrieved from http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te1000.htm on 3.2.13.

Rogers, E. M. (1995). *Diffusion of Innovations.* New York, NY: The Free Press.

Roza, M. & Swartz, C. (2007). School spending profiles: A framework to enlighten resource allocation decisions. *Public Budgeting and Finance.* 27(1) 69-85.

Sammons, P., Hillman, J. and Mortimore, P. (1995) Key characteristics of effective schools: A review of effectiveness research. Published by the Institute of education for the Office for standards in education. Retrieved from http://www.mp.gov.rs/resursi/dokumenti/dok132-eng-SESI_Key_characteristics_of_effective_schools.pdf on 10.20.11.

Schubert, T. & Andersson, M. (2013). Old is gold? The effects of employee age on innovation and the moderating effects of employment turnover. Centre for Innovation, Research, and Competence in the Learning Economy. Lund University, Sweden.

SEDL. *Concerns-Based Adoption Model (CBAM).* Retrieved from http://www.sedl.org/cbam/# on 7.5.14.

Sedlak, M., Wheeler, C., Pullin, D., Cusick, P. (1985). High school reform and the "bargain" to learn. *Education and Urban Society.* 17(2) 204-214.

Senge, P. M. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization.* New York: Doubleday.

Seton Education Partners (n.d.) *Phaedrus Initiative.* Retrieved from http://www.setonpartners.org/phaedrus-initiative-a2985 on 7.4.14.

Shear, L., Means, B., Mitchell, K., House, A., Gorges, T., Joshi, A., Smerdon, B., & Shkolnik, J. (2008) "Contrasting Paths to Small School Reform: Results of a 5-year Evaluation of the Bill & Melinda Gates Foundation's National High Schools Initiative." Teachers College Record, 110(9), p. 1986-2039.

Shepard, C. (2008). *The argument for blended learning.* Retrieved from http://clive-shepherd.blogspot.com/2008/07/argument-for-blended-learning.html#!/2008/07/argument-for-blended-learning.html on 3.2.13

Silins, H. C., Mulford, W. R., & Zarins, S. (2002). Organizational learning and school change. *Educational Administration Quarterly.* 38(5). 613-642.

Silins, H. C., Mulford, W. R., & Zarins, S. (2002). What characteristics and processes define a school as a learning organization? Is this a useful concept to apply to schools? *International Education Journal.* 3(1). 24-32. Retrieved from http://ehlt.flinders.edu.au/education/iej/articles/v3n1/silins/paper.pdf on 5.15.14.

Simburg, S. & Roza, M. (2012). Innovating towards sustainability: How computer labs can enable new staffing structures, and new savings. Seattle, WA: The University of Washington's Center on Reinventing Public Education. Retrieved from https://www.crpe.org/sites/default/files/brief_RR_innovativestaffing_dec12.pdf on 2.16.13.

Siskin, L. S. (2011). In O'Day, J. A., Bitter, C.S., & Gomez, L.M. *Education Reform in New York City: Ambitious Change in the Nation's Most Complex School System.* Cambridge, MA: Harvard Education Press.

Sitkin, S. B., & Stickel, D. (1996). The road to hell: The dynamics of distrust in an era of quality. *In Trust in organizations* (pp. 196-215). Thousand Oaks, CA: Sage.

Smarick, A. (2012). *The Urban School System of the Future: Applying the Principles and Lessons of Chartering.* Lanham, MD: Rowman & Littlefield Education.

Smerdon, B. & Means, B. (2005). *Evaluation of the Bill & Melinda Gates Foundation's High School Grants Initiative: 2001-2005, Final Report*. Washington, DC: American Institutes for Research / Menlo Park, CA: SRI International.

Somekh, B. (2008). Factors affecting teachers' pedagogical adoption of ICT. In J. Voogt & G. Knezek (Eds.) International Handbook of Information Technology in Primary and Secondary Education. (pp. 449-460). New York: Springer.

Spillane, J., Halverson, R., Diamond, J. (2004). Towards a Theory of School Leadership Practice: Implications of a Distributed Perspective. *Journal of Curriculum Studies. 36*(1), 3-34.

Springer, M. (Ed.) (2009) Performance Incentives: Their Growing Impact on American K-12 Education. Washington, DC: The Brookings Institution.

Stanley, D. J., Meyer, J. P. & Topolnytsky, L. (2005). Cynicism and resistance to organizational change. *Journal of Business and Psychology,* 19(4) 429-459.

Statsoft Electronic Statistics Textbook. (n.d.). How to reduce number of variables and detect relationships, principle components and factor analysis. Retrieved from https://www.statsoft.com/Textbook/Principal-Components-Factor-Analysis on 2.28.14.

Stewart, L. (2014). "Five characteristics of great blended learning teachers" Advance Path Academics. Retrieved from http://www.advancepath.com/blog/five-characteristics-of-great-blended-learning-teachers on 7.9.14.

Straub, E. T. (2009). Understanding technology adoption: Theory and future directions for informal learning. *Review of Educational Research.* 79(2) 625-649.

Strauss, V. (2010). *Are charter schools really innovative?* The Washington Post. Retrieved from http://voices.washingtonpost.com/answer-sheet/charter-schools/are-charter-schools-really-inn.html on 2.16.13.

Subramaniam, K. (2007). Teachers' mindsets and the integration of computer technology. *British Journal of Educational Technology.* 38, 1056-1071.

Sullivan, J. (2008). "Employment branding: The only long-term recruiting strategy." Retrieved from http://www.ere.net/2008/01/07/employment-branding-the-only-long-term-recruiting-strategy/ on 12.5.12.

Talbert, J. (1988). Conditions of public and private school organization and notions of effective schools in T. James & H. M. Levin (Eds.) *Comparing public and private schools, Vol 1: Institutions and organizations.* New York: Falmer Press

Teaching as Leadership, Continuously Increase your Effectiveness. (n.d.) Teach for America. Retrieved from http://www.teachingasleadership.org/continually-increase-effectiveness/cie-continuously-increase-your-effectiveness on 10.9.14.

Thernstrom, A. and Thernstrom, S. (2003). *No Excuses: Closing the racial gap in learning.* New York: Simon & Schuster.

Thorton, E. & West, C. E. (1999). Extent of teacher use of a mathematics curriculum innovation in one district: Years 1 and 2 Levels of Use (LoU). *Journal of Classroom Interactions.* 34(1) 9-17.

TNTP (2014). "Reimagining Teaching in a Blended Classroom." Retrieved from http://tntp.org/assets/documents/TNTP_Blended_Learning_WorkingPaper_2014.pdf on 3.2.15.

Tough, P. (2012). *How children succeed: Grit, curiosity, and the hidden power of character.* New York, New York: Houghton Mifflin Harcourt Publishing Company.

Tushman, M. L. & O'Reilly, C. A. (2002). *Winning through innovation: A practical guide to leading organizational change and renewal.* Boston: Harvard Business School Press.

Tyack, D. & Cuban, L. (1995). *Tinkering Toward Utopia: A Century of Public School Reform.* President and Fellows of Harvard College.

Tyack, D. & Tobin, W. (1994). The "grammar" of schooling: Why has it been so hard to change? *American Educational Research Journal.* 31(3) 453-479.

U.S. Department of Education (2014). Investing in Innovation Fund (i3) Program Guidance and Frequently Asked Questions (FAQs). FY 2014 Scale-up and Validation Competitions. Retrieved from http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCsQFjAA&url=http%3A%2F%2Fwww2.ed.gov%2Fprograms%2Finnovation%2Fsvfaq.doc&ei=lfZ4U6KUEMjjoATm1oD4CA&usg=AFQjCNGtGs229X1k9Wj_nVvF93CfUtWJ4Q&sig2=w278GqJUeKG36ymn-3Ul6w&bvm=bv.66917471,d.cGU on 5.18.14.

Vander Ark, T. (July 11, 2011). *Ten reasons why teachers love blended learning.* Retrieved from http://www.huffingtonpost.com/tom-vander-ark/10-reasons-teachers-love-_b_894222.html on 3.2.13.

Van Peer, W., Hakemulder, J., & Zyngier, S. (2012) Scientific Methods for the Humanities. John Benjamins Publishing Company: Philadelphia, PA

Villavicencio, A., Marinell, W. H. (2014). *Inside success: Strategies of 25 effective small high schools in NYC.* New York, NY: The Research Alliance for New York City Schools

Walberg, H.J. & Bast, J. L. (2003). *Education and capitalism: How overcoming out fear of markets and economics can improve America's schools.* Stanford, CA: Hoover Institution Press.

Waterman, R. H., Jr., Peters, T. J., & Phillips, J. R. (1980). Structure is not organization. *Business Horizons, 23(3),* 14-26.

Wahlstrom, K., & Louis, K.S. (2008). How teachers perceive principal leadership. *Educational Administration Quarterly*, *44,* 498–445.

Whitman, D. (2008). *Sweating the small stuff: Inner-city schools and the new paternalism.* Washington, D.C.: Thomas B. Fordham Institute Press.

Wei, X., Patel, D., & Young, V. M. (2014). Opening the "black box": Organizing differences between charter schools and traditional public schools. *Education Policy Analysis Archives.* 22(3). 1-34.

Wilson, S. F., Levin H., & Matthews, J. (2005). Realizing the promise of brand-name schools. *Brookings Papers on Education Policy, (8)* 89-135.

Woodworth, J. L. & Raymond, M. E. (2013). *Charter school growth and replication. Volume II.* The Center for Research on Education Outcomes. Retrieved from http://credo.stanford.edu/ on 3.1.13.

Woodworth, K., Greenwald, E., Tyler, N., Comstock, M. (2013). Evaluation of the first year of the Oakland blended learning pilot. SRI Education. Retrieved from http://www.rogersfoundation.org/system/resources/0000/0045/SRI_Evaluation_Oakland_Blended_Learning_Pilot_Nov2013.pdf on 5.15.14.

YES Prep (2012). Annual Report. Retrieved from http://yesprep.org/sites/default/files/media/YES%20Prep%20Annual%20Report.pdf on 2.13.14.

Zmud, R. (1984). An examination of push-pull theory applied to process innovation in knowledge work. *Management Science* 30(6): 727-738.

Appendix A. District/ CMO Representative Interview Protocol

1) What prompted [CMO/ district name] to use blended learning?
2) What was your vision for how blended learning would look by now in your network/ district?
    a. How often BL used? Teachers in what subjects/ schools/ contexts would be using BL?
    b. How would teacher time be used? How would student time be used?
    c. What content/ curriculum/ software would you use? How would you decide on this curriculum/ software?
    d. How does reality map onto your expectations? (How often in schools? How do you know?)
3) What is [CMO/ district name's] vision for what blended learning will look like in the network/ district in five years?
    a. Will BL be spread through the entire network/ district?
    b. How are decisions related to blended learning use made? In what ways do multiple perspectives contribute to this decision-making process?
4) How does BL change the jobs of principals and teachers?
    a. What kinds of supports have principals and teachers received that helps them understand how to transform their practice? (Formal training from network, software developer, etc., time to collaborate with other organizations that use BL, time to collaborate with each other, etc.)
    b. From your perspective, have these supports been adequate? What kind of additional supports do you think principals and teachers could benefit from?
    c. Have you begun to recruit differently?
5) Are there aspects of [CMO/ district name] that you think make it particularly well suited or poorly suited for BL implementation?
    a. Cultural aspects of the school and org? (college-going focus, tight discipline structures, high expectations, etc.)
    b. Degree of school autonomy (centralization, standardization)? Ability to start a new initiative in a new school?
        i. (Specifically probe BL in new vs. existing school here if network has both.)
    c. Systems like professional development, performance pay
    d. Human resources (capacities and character traits of those who work at the school, ability to hire and fire, freedom from pay scale?)
    e. Financial resources (state, organization, philanthropic support, etc.)—Has your financial situation influenced your adoption of BL? If so, in what way? Have you had to reallocate resources to accommodate or enable BL?
    f. How have your particular employees, students and parents contributed to how you've implemented BL? (both how you've decided to implement and how it's gone).
    g. How, if at all, has the state context (funding, laws) affected how you've implemented BL?

h. How, if at all, have pressures from funders affected how you've implemented BL?

6) As a network/ district, what have been the biggest challenges that you've faced in the blended learning adoption and implementation process?

7) As a network/ district, what have been the best choices that you've made in the blended learning adoption and implementation process?

8) If you were to do it again, how would you change how the network/ district has implemented BL?

Appendix B. Principal/ Administrator Interview Protocol

1) Can you tell me a little about why you decided to use BL when opening (school's name)?
   a. How did blended learning first come onto the district/ CMO's radar? Please explain the process that made blended learning a reality here.
   b. What was the decision-making process like? How did teachers contribute or respond?
   c. How did the students and parents contribute or respond?

2) What was your vision for how blended learning would look by now in your school?
   a. How often would BL be used? In what subjects/ grade levels/ schools?
   b. How would teacher time be used? How would student time be used?
   c. What content/ curriculum/ software you would use? How would you decide on this curriculum/ software?
   d. How does reality map onto your expectations?

3) What is your vision for what blended learning will look like in (your school) in five years?
   a. How do you think systems in the school will have to change to support this model? How do you plan to make these changes?

4) How, if at all, has the use of BL affected how you spend your time as principal?
   a. Do you feel that you were prepared to lead a school using BL? What prepared you? What might have been done to prepare you better?

5) How does BL affect how teachers spend their time?
   a. What kinds of supports have teachers received that helps them understand how to use BL effectively (transform their practice for teachers with past experience)? (Formal training from network, software developer, etc., time to collaborate with other organizations that use BL, time to collaborate with each other, etc.)
   b. From your perspective, have these supports been adequate? What kind of additional supports do you think teachers could benefit from?
   c. Did you recruit teachers differently than you would have if you weren't using BL? Did the hiring process look different than it would have if you weren't using BL?

6) Are there aspects of [school name] that you think make it particularly well suited or poorly suited for using BL?
   a. Cultural aspects of the school? (Communication, collaboration and distributed leadership, Trust, High expectations, spirit of continuous improvement, Clear, shared mission, Use of performance data to monitor progress toward goals, Culture that stresses discipline and focus on learning)
   b. Professional development systems
   c. Financial resources (state, organization, philanthropic support, etc.)
   d. Availability of BL resources (hardware, software, support)
   e. Availability of BL expertise (specialized knowledge)

f. How have your staff, students and parents contributed to how your school has implemented BL? (both how you've decided to implement and how it's gone).
g. How have CMO or district contexts affected your school's ability to implement BL: (Freedom from district regulations, Hiring systems and human capital pipelines, Functionality as part of network (between school community), External support and economies of scale, Ability to start fresh and act as an ambidextrous organization, Profile to external community)
h. How, if at all, has the state context (funding, laws) affected how your school has implemented BL?
i. How, if at all, have pressures from funders affected how your school has implemented BL?

7) How would BL implementation have been different if you started to use BL after the school was opened? D you think the implementation process would have gone differently?
   a. Probe: Culture, systems, structures, resources, stakeholders

8) As a school, what have been the best choices that you've made in the blended learning implementation process?

9) As a school, what have been the greatest challenges you've faced in the blended learning implementation process?

10) If you were to do it again, how would you change how the school has implemented BL?

Appendix C. Teacher Interview Protocol

1) Can you tell me a little about (school name's) decision to open using BL?
   a. Can you describe how blended learning came to be in your school and classroom? Can you describe the rationale for adopting BL?
   b. What was the decision-making process like? How did teachers contribute or respond?
   c. How did the students and parents contribute or respond?

2) Can you describe how BL is used in your classroom?
   a. How often do you use BL?
   b. How do you use your time? How do students use their time?
   c. What content/ curriculum/ software do you use?
   d. Does reality map onto your initial expectations of what BL would be like? If not, how so? Why do you think this is?

3) What is your vision for what blended learning will look like in your classroom in five years?
   a. What would have to change to support this kind of teaching and learning? Do you foresee such changes being made? How would the changes be made?

4) How, if at all, has the use of BL affected how you spend your time as a teacher?
   a. Do you feel that you were prepared to teach in a school using BL? What prepared you? What might have been done to prepare you better?
   b. What kinds of supports have you received to help you learn how to effectively teach using BL? (Formal training from network, software developer, etc., time to collaborate with other organizations that use BL, time to collaborate with each other, etc.)
   c. Do you feel that those supports have been adequate? What kind of additional supports do you think teachers could benefit from?

5) Are there aspects of [school name] that you think make it particularly well suited or poorly suited for BL?
   a. Cultural aspects of the school? (Communication, collaboration and distributed leadership, Trust, High expectations, spirit of continuous improvement, Clear, shared mission, Use of performance data to monitor progress toward goals, Culture that stresses discipline and focus on learning)
   b. Professional development systems
   c. Financial resources (state, organization, philanthropic support, etc.)
   d. Availability of BL resources (hardware, software, support)
   e. Availability of BL expertise (specialized knowledge)
   f. How have your staff, students and parents contributed to how your school has implemented BL? (both how you've decided to implement and how it's gone).
   g. How have CMO or district contexts affected your school's ability to implement BL: (Freedom from district regulations, Hiring systems and human capital pipelines, Functionality as part of network (between school community), External support and economies of scale, Ability to

start fresh and act as an ambidextrous organization, Profile to external community)

h. How, if at all, has the state context (funding, laws) affected how your school has implemented BL?
i. How, if at all, have pressures from funders affected how your school has implemented BL?

6) What do you think would be different about your school if you had implemented BL after operating in a more traditional model for several years? Do you think the BL implementation process would have been any easier? Harder? How so?

a. Probe: Would implementing after using a different model change any critical aspects of culture, systems, structures, resources, stakeholders

7) What do you like most about using BL?

8) What do you like least about using BL?

9) What have been your biggest lessons learned? What advice would you give to a teacher in a school that was about to implement BL?

Appendix D. Classroom observation guide

1) How many students are using computers? What are they doing on the computers?
2) Are students using unique passwords that allow records of activities to be linked to individual students? Is student work adaptive to their ability level?
3) How many students are *not* using computers? What are they doing? To what extent is this work personalized/ differentiated to individual student needs?
4) To what extent is work that students are doing on and off the computer aligned in terms of content?
5) Do most students appear to be using computers for remediation? Advance work? Reinforcement of recently learned content?
6) To what extent do students on and off computers appear engaged in their work? Supporting evidence?
7) Do students appear to understand what they are supposed to do? Are there clearly established routines guiding their actions?
8) Are there systems for tracking data in use (on or off the computer)? What kind of data are being tracked?
9) To what extent is there a focus on academic goal setting and rigor in the classroom? Evidence?
10) How many adults are in the room? What are they doing?
11) How is the classroom physically organized? How does this enable or constrain the use of technology? Small group instruction?
12) How does the observation align to the innovation configuration map (e.g. earlier descriptions of blended learning)?
13) What are the similarities and differences between how BL is being used in this classroom and other classrooms in the school?
14) What are the similarities and differences between how BL is being used here and in other schools?