Optional ERIC Coversheet — Only for Use with U.S. Department of Education Grantee Submissions

This coversheet should be completed by grantees and added to the PDF of your submission if the information required in this form **is not included on the PDF to be submitted**.

INSTRUCTIONS

- Before beginning submission process, download this PDF coversheet if you will need to provide information not on the PDF.
- Fill in all fields—information in this form **must match** the information on the submitted PDF and add missing information.
- Attach completed coversheet to the PDF you will upload to ERIC [use Adobe Acrobat or other program to combine PDF files]—do not upload the coversheet as a separate document.
- Begin completing submission form at https://eric.ed.gov/submit/ and upload the full-text PDF with attached coversheet when indicated. Your full-text PDF will display in ERIC after the 12-month embargo period.

GRANTEE SUBMISSION REQUIRED FIELDS

Title of article, paper, or other content

"It's just something that you have to do as a teacher": Investigating the Intersection of Educational Infrastructure

All author name(s) and affiliations on PDF. If more than 6 names, ERIC will complete the list from the submitted PDF.

Last Name, First Name	Academic/Organizational Affiliation	ORCID ID
Blaushild, Naomi	Northwestern University	https://orcid.org/0000-0001-8455

Publication/Completion Date—(if *In Press,* enter year accepted or completed) 2023

Check type of content being submitted and complete one of the following in the box below:

- ☑ If article: Name of journal, volume, and issue number if available
- ☐ If paper: Name of conference, date of conference, and place of conference
- ☐ If book chapter: Title of book, page range, publisher name and location
- ☐ If book: Publisher name and location
- ☐ If dissertation: Name of institution, type of degree, and department granting degree

Elementary School Journal, 124, 2

DOI or URL to published work (if available) 10.1086/727432

Acknowledgement of Funding— Grantees should check with their grant officer for the preferred wording to acknowledge funding. If the grant officer does not have a preference, grantees can use this suggested wording (adjust wording if multiple grants are to be acknowledged). Fill in Department of Education funding office, grant number, and name of grant recipient institution or organization.

"This work was supported by U.S. Department of Education **[Office name]** Institute of Education Scien through **[Grant number]** R305B1400 to **Institution]** Northwestern U. The opinions expressed are those of the authors and do not represent views of the **[Office name]** Northwestern University or the U.S. Department of Education.

"It's just something that you have to do as a teacher": Investigating the Intersection of Educational Infrastructure Redesign, Teacher Discretion, and Educational Equity in the Elementary ELA Classroom

Naomi L. Blaushild

Northwestern University

Department of Human Development and Social Policy

Author Note

Naomi L. Blaushild, https://orcid.org/0000-0001-8455-7866

This research was supported by the Spencer School Systems Study at Northwestern University and the University of Michigan, funded by a research grant from the Spencer Foundation (SP0034639-201600066) and a grant from the US Department of Education, Institute of Education Sciences, Multidisciplinary Program in Education Sciences (R305B140042). All opinions and conclusions expressed in this paper are those of the author and do not necessarily reflect the views of any funding agency. The author gratefully acknowledges members of her research team (Jim Spillane, Don Peurach, David Cohen, Jennifer Seelig, Christine Neumerski, Daniella Hall Sutherland, Max Yurkofsky) and those who gave feedback on earlier drafts.

Correspondence concerning this article should be addressed to Naomi L. Blaushild, The American Institutes for Research, 10 S. Riverside Plaza Suite 600, Chicago, IL 60606, nblaushild@air.org.

Abstract

School systems have taken on greater roles in guiding and supporting classroom instruction by redesigning their *educational infrastructure* – the coordinated resources, structures, and norms that support teachers’ work and drive instructional improvement. However, teachers often adapt or resist common instructional approaches citing students’ unique needs. Drawing on data from a qualitative, comparative study, I examine how different types of public-school systems (charter, suburban, and urban) redesigned their educational infrastructures and how teachers used system-provided educational infrastructure when constructing their practice. I found that teachers experienced their educational infrastructure as providing both affordances and constraints around their instructional decisions, particularly how they responded to their perceptions of students’ needs. Despite differences in each system’s educational infrastructure arrangements, teachers faced a common challenge related to differentiating instruction in diverse classrooms. Findings suggest the need for educational infrastructure redesign efforts to include professional learning around asset-based differentiation strategies and culturally responsive pedagogy.

Keywords: *Common Core State Standards, educational infrastructure, inhabited institutionalism, teacher decision-making, differentiation, educational equity*

“It’s just something that you have to do as a teacher:” Investigating the Intersection of Educational Infrastructure Redesign, Teacher Discretion, and Educational Equity in the Elementary ELA Classroom

Responding to policy pressures from the past few decades to improve instructional quality and reduce disparities, school systems in the U.S. have taken on greater roles in guiding and supporting classroom instruction (Bryk et al., 2010; Cohen et al., 2018; Mehta & Fine, 2015; Peurach et al., 2019). Some of these efforts involve (re)designing *educational infrastructure* – the coordinated resources, roles, and organizational structures that guide teachers’ practice and drive instructional improvement, as well as the norms, values, and belief systems that sustain this work – and supporting its use in schools (Cohen et al., 2013; Cohen & Bhatt, 2012; Hopkins et al., 2013; Peurach & Neumerski, 2015).

While these coordinated and aligned materials, approaches, and norms should allow schools to better identify and address students’ academic needs and improve teaching and learning, educational infrastructure only serves to improve instruction and reduce disparities if the infrastructure is well designed by systems and used effectively by teachers (Bryk et al., 2010; Cohen et al., 2013). Teachers play a central role in implementing new policies but often attempt to fit new initiatives into their preexisting beliefs and practices (Coburn, 2004; Everitt, 2012) or resist common materials and approaches, citing the unique needs of their classrooms (Weiss, 1990). Instructional decision-making involves considerations of content, pedagogy, pacing, grouping, assessment, and student engagement (Spillane & Burch, 2006). How school systems design, and how teachers use, educational infrastructure when making instructional decisions has important implications for students’ access to high-quality and equitable learning opportunities (Fraatz, 1987; Milner, 2014).

This study investigates how different types of public-school systems designed educational infrastructure to improve elementary English Language Arts (ELA) instruction and how these shifts were experienced and taken up by teachers. Drawing on qualitative data from a comparative study of school systems’ instructional improvement efforts in the context of the Common Core State Standards (CCSS), I analyzed semi-structured interviews (n = 75) with 32 school system leaders and 24 teachers from a charter network, a suburban district, and an urban district (hereafter, “school systems”). These public school systems were selected given their recent efforts to redesign their educational infrastructure and align them to the CCSS. However, each system’s educational infrastructure arrangements for elementary ELA varied, creating different sets of conditions for teachers’ instructional decision-making. I found that teachers experienced system-wide educational infrastructure as providing affordances and constraints around their decision-making, especially the extent to which they could respond to (their perceptions of) students’ needs. Despite these differences, teachers across all three systems experienced a common challenge around student variability and differentiating instruction. These findings have important implications for school systems’ capacities to design for, and teachers’ capacities to deliver, high-quality and equitable instruction in the elementary ELA classroom.

Conceptual Framework and Relevant Literature

The conceptual framework for this paper draws from the literature on educational infrastructure, teachers’ responses to reforms, and teachers’ instructional decision-making. I leverage inhabited institutionalism (Hallett & Ventresca, 2006) to analyze how teachers are both enabled and constrained by the structured conditions of their environments (i.e., system-level educational infrastructure) and racialized organizations theory (Ray, 2019) to explore how those structured conditions can create space for perpetuating or disrupting educational inequities.

Systemwide Efforts to Improve Instruction

Educational policies from the standards and accountability era (e.g., No Child Left Behind, Race to the Top) aimed to improve teaching and learning and reduce racial and socioeconomic disparities in student outcomes by creating common learning standards and holding schools, districts, and teachers accountable for students' test scores (Cohen et al., 2013; Mehta, 2013; Peurach et al., 2019). Yet, some scholars argue that efforts to improve teaching and learning in the U.S. have stagnated because, beyond developing standards and assessments, these policies did not provide the critical layer of resources – or *educational infrastructure* – that guide instructional improvement (Cohen et al., 2013; Cohen & Bhatt, 2012; Mehta & Fine, 2015).

Recent scholarship has documented some school systems' efforts to build and coordinate educational infrastructure to improve instruction and reduce educational disparities (Bryk et al., 2010; Cohen et al., 2013, 2018; Mehta & Fine, 2015; Peurach et al., 2019). Though educational infrastructure may differ by school and system, it generally includes roles (e.g., instructional coaches), structures (e.g., professional development), and resources (e.g., curricula and student assessments) that drive instructional improvement, as well as the norms, values, and belief systems that support this work (Hopkins et al., 2013; Peurach & Neumerski, 2015). Importantly, the capacity of educational infrastructure to improve teaching and learning depends on how well the infrastructure is designed, its clarity and accessibility, learning opportunities for teachers, and how well teachers use it (Bryk et al., 2010; Cohen et al., 2013).

A key component of educational infrastructure design is the extent to which school systems attempt to standardize and monitor classroom instruction across schools (Mehta & Fine, 2015; Peurach et al., 2019). Such efforts could involve varying levels of commitment and control approaches – different organizational design features that attempt to guide teachers' work to

improve student achievement (Rowan, 1990). The control approach involves a highly structured system of input, behavior, and output controls with the aim of regulating teachers' practice and standardizing students' opportunities for learning. The commitment approach relies on innovative working arrangements that support teachers' decision-making. The rationale of this approach is that increased teacher collaboration and engagement will spur teachers' energy and expertise and lead to improved student outcomes (Rowan, 1990). While commitment and control approaches reflect different assumptions about which levers can improve student outcomes, they are not mutually exclusive. Such approaches often coexist, though different schools and systems may place more emphasis on one approach over the other (Desimone, 2006; Shirrell, 2016).

Teachers' Responses to Educational Reforms

Systemwide attempts to improve students' access to high-quality and equitable instruction by (re)designing their educational infrastructures rely heavily on how teachers interpret, enact, and adjust system-level instructional guidance to meet students' academic needs. Teachers bring their social experiences, prior knowledge, beliefs, and practices to their sensemaking and implementation of new policies (Coburn, 2001; Spillane et al., 2002) and tend to privilege their preferred practices over the demands of their districts and schools (Everitt, 2012). Accordingly, studies have found considerable variation in teachers' enactment of educational policies (Cohen, 1990; Woulfin, 2015), even when teachers express support for the change (Datnow & Castellano, 2000).

Teachers collectively make sense of new instructional policies and how to implement them among their colleagues (Coburn, 2001), and school leaders' interpretations and messaging of policy changes can influence teachers' practice and take up of instructional reforms (Coburn, 2005). Further, schoolwide policies can mediate or disrupt teachers' implementation of new

policies (Bridwell-Mitchell & Sherer, 2017; Park & Datnow, 2017). A study of CCSS implementation found that tracking, as a school-level policy, signaled to teachers what curricula and approaches were appropriate for different groups of students (Hodge, 2019). Despite messaging from the CCSS around "rigor for all," many teachers maintained fixed views of students' abilities and gave students in lower tracked classes less rigorous work.

Teachers may also resist systemwide attempts to improve instruction if such shifts appear to conflict with their beliefs about teaching and learning or undermine their efforts to meet students' needs (Weiss, 1990). Teachers are responsible for teaching grade-level content to all students and adjusting their instruction to meet students' different social, linguistic, cultural, and instructional needs by differentiating how content is presented and/or how students are expected to respond (Dixon et al., 2014; Fraatz, 1987; Park & Datnow, 2017; Parsons et al., 2018). Although teachers often rely on test scores to determine students' needs and adjust their instruction accordingly, teachers' perceptions of students' behaviors and backgrounds may influence how they interpret seemingly objective measures, such as test scores, (Fraatz, 1987; McLaughlin & Talbert, 1993).

In sum, teachers' sensemaking of reforms, professional contexts, and their perceptions of students' needs underscore how they enact educational reforms through their instructional decision-making. To highlight how the interaction of system-level educational infrastructure and teacher decision-making shapes students' access to high-quality and equitable instruction, I draw on inhabited institutionalism and racialized organizations theory.

Inhabited Institutionalism and Racialized Organizations

Inhabited institutionalism argues that individuals are both enabled and constrained by the structured conditions or rules in their environments and actively make sense of and negotiate

legitimate action through their local interactions (Binder, 2007; Everitt, 2018; Hallett & Ventresca, 2006). Whereas a sense-making perspective draws attention to how individuals bring their beliefs, values, and emotions to bear in understanding novel or confusing events (Spillane et al., 2002; Weick, 1995), inhabited institutionalism emphasizes how sense-making is situated in day-to-day work practice. Rather than automatically following top-down policies, individuals question them, combine them with personal beliefs and resources, and make them fit their needs (Binder, 2007; Coburn, 2004; Hallett & Ventresca, 2006).

However, inhabited institutionalism on its own cannot fully explain the interaction of system-level instructional guidance, teachers' individual instructional decision-making, and its implications for students' access to high-quality and equitable learning opportunities. Bringing institutional and race theories into conversation, Ray (2019) argues that all "inhabited institutions" are "peopled with racialized bodies," and that racial inequality in "not merely 'in' organizations but 'of' them, as racialized processes are foundational to organizational formation and continuity" (Ray, 2019, p. 48). Racialized organizations theory highlights how teachers' decision-making occurs within inherently unequal and racialized school systems. Accordingly, school systems' approaches to organizing teachers' work – be they more aligned to commitment or control approaches – have ambiguous implications for educational equity (Ball, 2018).

School systems' efforts to support instructional improvement and equity in the elementary ELA classroom involve structuring teachers' work to ensure both consistency and flexibility (Peurach et al., 2019). Control approaches that constrain teachers work through mandated, prescriptive approaches to instruction could prevent teachers from adapting instruction to meet students' needs and/or make their lessons more culturally responsive (Milner, 2014; Parsons et al., 2018). However, some constraints, such as those on ability-grouping – a

practice found to have long-term, negative effects on student learning (Boaler, 2011) – could increase access to equitable instruction. Conversely, commitment approaches provide space for teacher discretion, which allows teachers to get to know their students and communities and teach in culturally responsive ways (Gay, 2013). And yet, these “discretionary spaces” also allow racism, sexism, and other forms of oppression to permeate the classroom (Ball, 2018).

Deficit-oriented thinking around student differences is one way that teacher discretion can perpetuate educational inequities. Some teachers’ perceptions of students’ needs emphasize students’ deficits and assume that students’ poor performance stems from their families’ failures to adequately prepare students for school (Fraatz, 1987). Such deficit-oriented views tend to result in teachers taking less responsibility for student learning (Diamond et al., 2004) or lowering their expectations for students (McLaughlin & Talbert, 1993). For example, a study of teachers’ use of test score data found that teachers attributed student outcomes to both their instruction and students’ characteristics (Bertrand & Marsh, 2015). This attribution may have reflected and reinforced low expectations for students with disabilities and English language learners (ELLs). These findings demonstrate one tenet of racialized organizations theory – that seeming “objective” practices (i.e., data-driven instruction) may be enforced in ways that disadvantage non-dominant groups (Ray 2019, p. 42).

Overall, inhabited institutionalism draws attention to the ground-level meaning-making and behavior of individuals situated in complex organizations and illuminates how individuals combine top-down policies with personal preferences and social resources. Racialized organizations theory emphasizes that these conditions and individual decision-making are inherently racialized (Ray, 2019), and that both constraints and discretion in teachers’ work provide opportunities for disrupting and perpetuating educational inequities (Ball, 2018).

Research Questions

Grounded in these empirical and theoretical insights, I investigate the following:

1. How do different public-school systems design educational infrastructures to support instructional improvement in elementary English Language Arts?
2. How do teachers report using system-provided educational infrastructure when making instructional decisions? How, if at all, do these reported practices vary across school system with different educational infrastructure arrangements?
3. How do teachers describe addressing student variability using system-provided educational infrastructure in diverse classrooms?

Methods

I analyzed semi-structured interviews (Weiss, 1995) with system leaders and teachers from three different public school systems. Data came from a larger, comparative study ("School Systems Study"), which investigated how public, private, and hybrid school systems made comprehensive and coordinated attempts to improve instruction. The School Systems Study explored how different types of school systems used resources (e.g., state standards and evaluation systems) and ideas (e.g., standards and accountability, markets, professionalism, and equity) from their institutional environments when (re)designing their educational infrastructures. Given the emphasis on literacy as a tested subject in the standards and accountability era (Cohen et al., 2018; Peurach et al., 2019), the study focused specifically on school systems' efforts to improve elementary ELA instruction.

Data Collection and First-Level Analysis

Data collection took place from 2016 to 2018 by a research team of three primary investigators, three postdoctoral fellows, several doctoral student researchers (including the

author), and several undergraduate research assistants. Consistent with its theory-building goals, the study used a purposive sample (Miles et al. 2014) of six systems to 1) maximize variation in system type, governance arrangement, historical origins, and approaches to managing instruction; and 2) include systems that had recently (re)designed their educational infrastructures for elementary ELA instruction. These criteria led to a sample of three public systems: urban, suburban, and charter; one private system: Catholic; and two hybrid, transnational systems: Montessori and the International Baccalaureate (IB). The research team selected system leaders for interviews by reviewing organizational charts and snowball sampling (Weiss, 1995). The research team conducted 75-minute semi-structured interviews (Weiss, 1995) with 71 system leaders (e.g., district superintendents, directors of curriculum and instruction) about system-wide efforts to improve elementary ELA instruction, priorities, and challenges.

Next, in cooperation with participating school systems, the research team selected two elementary schools per system with the goal of including one school that had historically met state-level benchmarks according to state assessments and one that historically struggled to do so. School-level data collection involved initial and follow-up semi-structured interviews (60-80 minutes total) with school leaders, instructional specialists, and teachers and observations of organizational routines and ELA classroom instruction. Teachers were asked to describe their instructional decisions (e.g., how did you decide what to teach today?" and "how do you make decisions around teaching objectives and curriculum?"), assessment practices (e.g., "how do you determine if students met the objective?"), the availability of professional development opportunities and other instructional supports, and successes and challenges related to ELA instruction. The team conducted 59 interviews with 35 school leaders and 87 interviews with 49 teachers. All interviews were audio-recorded, transcribed, and uploaded to NVivo for analysis.

The research team met weekly to discuss emergent themes from interviews and observations, wrote case narratives to capture the distinct stories of each school and system, and crafted analytic memos on recurring themes across multiple systems (Miles et al., 2014). The team then developed an extensive codebook combining deductive codes derived from the study's conceptual framework and inductive codes reflecting emergent themes. The final codebook included over 20 distinct codes to capture participants' discussions of specific components of educational infrastructure (e.g., organizational roles and routines, teachers' practice and instructional materials), system-driven efforts to improve instruction, and relationships between the system and its broader environment (e.g., policies). After achieving interrater reliability, researchers applied these codes to all interview data (see Appendix).

Initial analyses revealed that all six systems had redesigned their educational infrastructures to align with the CCSS (Peurach et al., 2020; Spillane et al., 2019). However, throughout initial rounds of data collection and analysis, it became increasingly evident that these efforts varied among school systems and were met with a range of responses from teachers. This was particularly salient in the three public systems, which are typically more responsive to changes in state education policy changes (Mehta, 2013). To explore teachers' responses to system-wide educational infrastructure in the context of the CCSS, this paper focuses on the public systems.

Study Sample: Public School Systems and Focal Schools

The three focal public systems were located in the same state and had recently redesigned their educational infrastructures for elementary ELA to align with the CCSS and associated state assessments. Both the urban and suburban systems were conventional public-school districts in that they served students within specific geographic boundaries. The urban system was located in

a mid-sized, industrial city (and refugee resettlement zone) and served students from diverse racial, linguistic, and socioeconomic backgrounds. The suburban system was located near a large urban center and historically served a majority white, middle-class student population. Recent demographic shifts led to increased racial and socioeconomic diversity across the system, including a growing working class, Latinx population, immigrant population, and rising numbers of ELLs. The charter system, located in a large city, used a lottery system to enroll predominantly low-income, Black, and Latinx students from multiple neighborhoods. The system was similar to other "no excuses" charter networks, an unofficial label referring to these schools' strict academic and behavioral standards, intensive teacher training and socialization, and focus on getting historically marginalized students to college (Cheng et al., 2017; Golann, 2015). Consistent with the larger study's design, the two focal elementary schools included one that had historically met state-wide performance benchmarks in tested subjects and one that had struggled to do so. Table 1 shows student enrollment and demographics by system and school.

[Table 1 Here]

That the focal urban and suburban schools with historically lower state test scores also served higher proportions of Black, Latinx, and low-income students is no accident. Due to discriminatory housing policies, school funding inequities, and divestments in public education and the social safety net, urban school districts are often racially and socioeconomically segregated (Darling-Hammond, 2014). Many urban schools serve large proportions of low-income, Black, Latinx, ELL, and immigrant students and are often under-resourced, characterized by "educational debt," (Ladson-Billings, 2006) and high rates of teacher turnover (Lankford et al., 2002), and subject to punitive accountability measures and hierarchical controls, (Diamond & Spillane, 2004). Suburban districts increasingly serve students of color, immigrants,

and students living poverty, and experience similar patterns of within-district segregation and inequities (Diamond & Posey-Maddox, 2020; Turner, 2020). In the urban system, Marigold was in its third year of turnaround status due to years of low test scores and served large numbers of low-income, ELL, and immigrant students. In the suburban system, Beacon Hill was situated in the growing working class and Latinx neighborhood. East Fillmore (urban) and Walt Whitman (suburban), which served relatively higher-income student populations, historically met state-level benchmarks and were schools for teachers in the district. I highlight these patterns to foreground how they surfaced in teachers' accounts of their practice and instructional decisions.

Second-Level Coding and Analysis

I analyzed a total of 75 interviews with 32 system leaders and interviews with 24 teachers in the charter, suburban, and urban systems (see Table 2).

[Table 2 Here]

To answer my first research question, I analyzed system leaders' discussions of system-wide efforts to improve instruction. I relied on the overall study's codebook to identify relevant system leader interview excerpts. Specifically, I focused on leaders' discussions of recently redesigned educational infrastructure components, and how they described designing and guiding teachers' day-to-day work (e.g., through instructional resources, organizational resources, system-level instructional goals), providing professional development opportunities, and managing teacher and school leader recruitment, hiring, evaluation, and retention. Drawing on Rowan's (1990) definitions of commitment and control approaches, I deductively coded system leader interview excerpts to identify examples of each approach within and across systems and determine how systems' overall approaches to organize teachers' work varied, if at all. Whereas control approaches include highly structured systems to regulate teachers' practices

and standardize instruction, commitment approaches attempt to spark innovation, collaboration, and engagement among teachers to improve teachers. Since both sets of approaches tend to coexist in varying degrees within schools and districts (Desimone, 2006; Shirrell, 2016), I analyzed to what extent each system's educational infrastructure included varying degrees of commitment and control approaches (relative to the other two systems).

Next, to investigate how these educational infrastructure building efforts were interpreted and taken up by teachers, I open-coded (Corbin & Strauss, 1990) excerpts of teacher interviews that captured their discussions of instructional decisions, perceptions and use of educational infrastructure, perceptions of students, successes, and challenges. I generated a list of common themes related to teachers' interpretations of system-level expectations, their reported use of system-provided and/or teacher-created materials, the ways in which they felt enabled or constrained from meeting their current students' needs, and challenges related to instruction. When explaining their instructional decisions, teachers commonly mentioned their curriculum, state standards and assessments, interactions with colleagues, professional experience, students' academic needs, and/or student engagement. Moreover, teachers typically surfaced challenges related to student variation or the need to differentiate instruction, student behavior, issues concerning testing, the need to learn new content, concerns about not having enough time, and/or that system-provided curricula was too hard or inaccessible for their students. Teachers' common concerns about differentiation and meeting students' instructional needs motivated my third research question: How do teachers describe addressing student variability using system-provided educational infrastructure in diverse classrooms? I used a partially ordered meta-matrix (Miles et al. 2014) to explore the prevalence and nature of these concerns and other common themes within and across systems.

Finally, leveraging inhabited institutionalism, I explored how teachers weighed multiple considerations in their instructional decisions in response to system-wide expectations and/or personal preferences, professional commitments, and interactions with students and colleagues (Binder, 2007; Hallett & Ventresca, 2006). Comparing teachers’ explanations of their instructional decisions and challenges related to ELA instruction, I developed a set of preliminary findings aligned to my research questions. I then combed through the data for supporting and disconfirming evidence to systemically check and refine my findings. While my analysis relied primarily on system leader and teacher interviews, I used case narratives from the larger study and school leader interviews to provide additional context and to triangulate my interpretations of school and system contexts.

Findings

Each system’s educational infrastructure used varying levels of commitment and control approaches to organize teachers’ work. Teachers experienced their educational infrastructures as providing both affordances and constraints around their instructional decisions, particularly the extent to which their *perceptions* of students’ needs factored into their instructional decision-making. As shown in Figure 1, teachers in the charter system experienced constraints on infusing their perceptions of students’ needs into their ELA decision-making and only felt enabled to use the system-wide resources and guidance as directed. Conversely, responding to educational infrastructures characterized by less control, suburban and urban teachers felt enabled to respond to both their perceptions of students’ needs and system-wide educational infrastructure when making instructional decisions. Nonetheless, regardless of their educational infrastructure arrangements, teachers across systems struggled with differentiating instruction, and in some cases, maintained deficit views of their students from historically marginalized backgrounds.

[Figure 1 here]

Differences in Educational Infrastructure Arrangements by System

Prior analyses indicate that all systems in this study were engaging in efforts to develop and mobilize educational infrastructure to meet the demands of the CCSS and reduce disparities in educational opportunities and outcomes, particularly for low-income, Black, and Latinx students, and students with disabilities (Peurach et al., 2020; Spillane et al., 2019, 2022). All systems purchased or created a common ELA curriculum and offered various opportunities for professional development and instructional coaching. While schools and school systems generally use a mix of both commitment and control approaches (Desimone, 2006; Shirrell, 2016), the focal systems differed in the relative weight given to each strategy. I describe these differences as falling along a spectrum of commitment and control (see Figure 1). Table 3 summarizes the core elements of each system’s educational infrastructure for elementary ELA.

[Table 3 Here]

Charter System: High Control/Low Commitment. Responding to a recent drop in state test scores and seeking to provide students with rigorous and CCSS-aligned instruction, the charter system redesigned its educational infrastructure to include specific and standardized guidance for instruction. The system provided all teachers with daily lesson resources that detailed what content should be taught, how long each lesson component should take (e.g., modeling vs. independent practice), and what materials teachers should use. Charter system leaders expected teachers to closely follow daily lesson resources and explained that a detailed curriculum, pacing guide, and aligned professional development and instructional coaching would allow teachers to spend less energy on creating lessons and more energy on “intellectually” preparing to teach.

The system designed both district and school-wide professional development sessions for teachers aligned to the lesson resources. At the school-level, teachers were frequently observed by and met with content-specific instructional coaches, who facilitated routines (e.g., looking-at-student-work protocol) aligned with systemwide instructional resources and assessments. Additionally, the system's teacher recruitment and hiring processes were designed to select teachers who believed in the charter system's mission and demonstrated their receptiveness to feedback. The system's expectations for teachers and aligned instructional resources and routines contribute to an educational infrastructure characterized by "high control/low commitment."

Suburban System: High Commitment/Low Control. In contrast, despite recent efforts to ensure that all elementary schools were using the same reading and writing curriculum – *Teachers College Readers and Writers Project* (TCRWP) – the suburban system's educational infrastructure primarily embodied a "commitment" strategy for guiding teachers' work. System leaders described the common tools and approaches they expected to see across elementary classrooms (e.g., workshop model, mini-lesson, accountable talk, word walls, teacher-student conferencing) and hired an external professional development provider to work with grade-level teams across all elementary schools on the TCRWP approach. However, many instructional decisions, such as the pacing of each lesson or unit, were seemingly left to schools and classrooms. According to the district superintendent,

> That's a next level of work. The decision-making around how long particular topics take or how long a unit takes, and even how many of them at the grade level a teacher would get through over the course of the year, that's—I don't know where the decision-making lies for that. It may well lie with the individual teacher right now.

This response, including not knowing "where the decision-making lies for that," was characteristic of how suburban leaders described the elementary ELA educational infrastructure.

Although the suburban system's central office was in the process of building educational infrastructure to increase instructional coherence across schools in their system, they expressed trusting teachers to deliver high-quality instruction in line with the *TCRWP* model (Peurach et al., 2020). The system's reliance on teacher experience, professional judgement, and discretion was reflected in their teacher recruitment and hiring, as system leaders discussed seeking out and hiring teachers who already had several years of experience teaching *TCRWP.*

Urban System: Hybrid. In the urban system, some system leaders attributed low test scores to the increased rigor of the CCSS and teachers' low expectations for students, particularly students of color, ELLs, and students receiving special education services. At the same time, leaders believed that teachers should be able to differentiate instruction to meet the specific needs of their classrooms. These two concerns led to a "hybrid" approach to organizing teachers' work as they redesigned their educational infrastructure for elementary ELA. The system provided a common curriculum and a pacing guide and developed a train-the-trainer model of professional development, wherein the district trained school-based literacy coaches to work with teachers.

However, the district did not provide daily lesson plans, and leaders emphasized the importance of teachers differentiating instruction to meet students' unique needs. The Chief Academic Officer (CAO) recognized the importance of teacher flexibility but discouraged teachers from using unvetted supplemental materials and activities. She explained that teachers' use of certain supplemental resources could prevent the system from seeing improvement on CCSS-aligned assessments:

> Trying to get the rigor of the Common Core embedded in classrooms is probably our biggest challenge. It's multifaceted. Sometimes it's level of expectation. I've heard feedback that, 'Well, we can't use the reading program because it's too hard'…. Then that's when people will pull in some of this other material that we've been finding, which is very low level and they're never gonna meet the state standards.

By giving teachers some choice over supplemental activities and attempting to restrict the use of others, the urban system employed both commitment and control strategies – a hybrid approach.

Teachers' Experiences of Supports and Constraints on Instructional Decision-Making

Though teachers in all three systems attempted to bring in various personal and social resources (e.g., beliefs about teaching, preferred practices, perceptions of their students, social interactions) into their teaching, charter teachers experienced constraints on infusing their preferred approaches, whereas most suburban and urban teachers felt enabled to combine them with system-level infrastructure. This led to three different patterns of educational infrastructure use: *selecting and combining*; *implementing and redirecting*; and, *resisting.*

Infrastructure Use in the Charter System: Implementing and Redirecting. Most charter teachers responded to their system's educational infrastructure through a pattern of *implementing and redirecting*. Teachers used educational infrastructure as directed whether it aligned with their preexisting beliefs and practices or not. When feeling constrained from using educational infrastructure in ways that aligned with their beliefs and practices, teachers redirected those preferences toward other areas of their work where they found more discretion (e.g., in adjusting their classroom routines and environments).

Charter teachers described following the system's daily lesson resources, which determined what to cover, for how long, and what texts to use. The system also restructured

teachers' planning time into an "intellectual preparation period" (IPP), in which teachers were expected to work through students' expected tasks, anticipate where students might struggle, and create questions and stopping points in the system-provided text. Charter teachers described frequent observations and work sessions with their academic deans and using system-created protocols to analyze student work. Unsurprisingly, then, teachers felt constrained from making substantial changes to system-provided resources. Ms. Dooley, a teacher at Enterprise, explained

> In terms of the content… I have very little control over that. We get a lot of feedback, too, on how our lessons are moving along, according to the time structure that's built into the lesson plan. If we're taking a little long on one section, then we get feedback on that. The expectation is that we're really trying to follow those plans to fidelity

Here, multiple components of educational infrastructure worked together to guide Ms. Dooley's decisions: feedback from instructional coaches, time structure built into the lesson plans, and the expectation that she follows system-provided lesson plans "to fidelity."

Charter teachers from both focal schools typically described system-provided resources as "top quality," and "rigorous." However, many also expressed their discomfort at the fast pace of their lessons and units and the rigid behavioral system characteristic of "no excuses" schools. Although constrained from making substantial changes to the content, pacing, and materials for lessons, charter teachers described *redirecting* their personal beliefs and preferences into other adjustments they felt enabled to make in their classrooms. For example, Ms. Dooley carved out time for students to walk around the classroom and discuss texts with their classmates to reflect "a vision of how I'd like my classroom to feel all of the time," which "can be hard to do when you work in a school that shares very specific systems and routines and also students." This pattern of implementing and redirecting was evident in both focal schools and often related to

teachers' attempts to buffer students from the rigidity of the "no excuses" environment. At Summit, Ms. Donovan, described how she advocated for school-wide changes. Believing that "SLANT" – requiring children sit up straight with their hands folded during instruction – was not "developmentally appropriate" for children, Ms. Donovan and several colleagues convinced their school leaders to stop using the SLANT practice school-wide. This allowed her to both implement system-provided educational infrastructure as directed and redirect her personal beliefs and preferred practices to making other changes to her classroom environment.

Infrastructure Use in Urban and Suburban Systems: Selecting and Combining. In the suburban and urban systems, teachers experienced educational infrastructures characterized by less control and more commitment. Teachers' explanations of their decision-making in the ELA classroom and uses of system-level educational infrastructure corroborate prior research on teachers often attempting to fit new instructional policies into their preferred approaches (Coburn, 2004; Cohen, 1990; Datnow & Castellano, 2000; Everitt, 2012; Weiss, 1990; Woulfin, 2015). All suburban and most urban teachers engaged in a pattern of *selecting and combining* – they selected which components of educational infrastructure to use and combined them with various other resources that they created or found on their own. Although all teachers in the suburban and urban systems mentioned their system-provided ELA curricula as influencing their instructional decisions, most described adjusting multiple aspects of system-provided educational infrastructure (e.g., content and time spent on certain lessons and units) and using teacher-purchased or teacher-created supplemental resources.

In both suburban schools, teachers described the *TCRWP* units as "guidelines" for instruction and felt unrestricted from adapting these units to fit their classroom's unique needs. As Ms. Becker, a Beacon Hill teacher, explained:

> I think it's just something that you have to do as a teacher… because each year is so different. They may… be like, 'Oh, this is what we're gonna follow,' but once you're in that classroom, no matter what year you have, it's different. Even your highest student and your lowest student; you could have a two-to-three grade-level difference.

Suburban and urban teachers used this pattern of selecting and combining to make instructional decisions that fit their personal beliefs about teaching and learning.

While the system provided various professional development opportunities associated with using the purchased curricula, teachers' formal and informal collaboration times reinforced their selective use of system-level educational infrastructure. Though the suburban system hired outside consultants to train and coach teachers around the *TCRWP*, planning decisions often occurred within grade-level teams. As Ms. Lowe, a Walt Whitman teacher, explained

> We have a scope and sequence, and we meet regularly. In fact, we met yesterday to kind of talk about, all right, so who's behind? Who's ahead? What should we – what's most important to use that we cover? We can cut this band out, or cut part of this out.

Ms. Lowe's description of the scope and sequence embedded in the *TCRWP* curriculum shows how suburban teachers felt enabled to modify system-level educational infrastructure to meet the needs of their classrooms. Here, teachers used a pattern of selecting and combining in ways that fit their collective understandings about what students need across their grade-level.

Urban teachers described their use of system-level educational infrastructure similarly. As East Fillmore's Ms. Conover explained

> We just pull it together. It's a lot of different resources. We each have different things. We're, oh, let's do this. We pile it all together. A lot of times we need short passages to just practice. We just search all over the place for stuff.

Ms. Conover’s description shows how teachers at East Fillmore combined *Journeys* with additional, teacher-created or teacher-selected resources to give students opportunities for additional practice. Though the urban CAO explained the system’s attempt to restrict unvetted supplemental materials (which could be “very low level”), Ms. Conover still felt enabled to “search all over the place” for additional texts.

Teacher Resistance of System-Level Educational Infrastructure. Four teachers described *resisting* system-level instructional guidance by purposefully not using educational infrastructure as intended. This pattern surfaced when teachers perceived their school system’s educational infrastructure as antithetical to their preexisting beliefs and practices, and were unconcerned about consequences for resisting system-level guidance.

At Marigold Elementary in the urban system, three out of five participating teachers reported that, despite being monitored by system leaders, they occasionally resisted system-level instructional guidance. Given Marigold’s current turnaround status and years of low test scores, teachers experienced frequent visits from system leaders that involved checking in on their use of system-provided educational infrastructure. However, some teachers described these grade-level materials as too challenging for some of their students, particularly ELLs and recent immigrants. Ms. Johnson, a Marigold teacher, explained:

> There have been times where the district has—in fact, they do walkthroughs, and they’re in the building all the time. They came in a few weeks ago, and that one little boy that had just entered… started having some trouble. He’s non-verbal which is normal, but he’s also having some other issues as well. He was not using the *Journeys* materials at the time. I had him doing a more appropriate reading activity, and I was told that that was

> incorrect. He needed to have the *Journeys* grade five text in front of him. He doesn't know how to form letters yet.

She continued that she deviates from using system-provided educational infrastructure when she can "justify it with the data" and stood up to system-level officials when they questioned her:

> I'm kind of a quiet person, so it's hard for me to sometimes speak up, but if I feel like it's really what they need—then I spoke up about them making the comment about that boy. It was not appropriate for him to sit there for twenty minutes with a text in front of him that he—he had the book upside down at one point.

Ms. Johnson was one of three (out of five) participating Marigold teachers to describe getting "scolded" by system leaders during walk-throughs and defending their practices to system leaders. Although these teachers described feeling frustrated by such incidents, they did not express any concerns about other negative consequences of their decisions.

The only other instance of resistance occurred in the charter system at Summit elementary. Ms. Carroll, who had recently moved into the role of learning specialist, worked primarily with small groups of students. She described using system-provided curriculum and materials for reading intervention and drawing on approaches and resources from her graduate program. Though she found the charter system's constraints on teachers' instructional decision-making limiting, she eventually found ways to work around them:

> It can be very frustrating to want to roll something out that's new or that I want to try with kids. It feels like you have to go through a process to get it approved, or you do it, and then you'll have to just answer a lot of questions afterwards, which is usually my *[laughter]* path that I take after learning the first few years that the worst thing that's gonna happen is they're gonna talk to me about it.

Ms. Carroll's time in the charter system, and unique learning specialist position, for which she was less likely to be observed by school leaders, underscored her occasional resistance.

Educational Infrastructure and Teacher Adaptations in Diverse Classrooms

Although teachers were differentially enabled and constrained to adjust system-wide educational infrastructure, teachers across all systems confronted a similar challenge of teaching system-provided, grade-level curricula to students with a wide range of reading levels. Teachers often described their classroom compositions as encompassing a "range of readers" and the curriculum as too challenging or inaccessible. At suburban Beacon Hill, Ms. Becker explained:

> You wanna make sure the child's learning, but every time you're teaching them something that they're not understanding, what are you supposed to do: keep teaching what you're supposed to be teaching, or teaching them what's gonna help them most? You have to teach the curriculum, and just tailor it as best you can.

Others echoed their frustration at this disconnect between "what you're supposed to be teaching" and "what's gonna help [students] most." Elementary ELA is largely comprised of reading instruction, which, despite decades of research, is full of complexity and uncertainty (Fraatz, 1987; Jensen, 2021). Consistent with prior research, teachers frequently discussed "differentiation" and student variation as major challenges and felt incapable of meeting all students' needs on a given day (Fraatz, 1987; Weiss, 1990). However, the different system-level educational infrastructure arrangements structured teachers' responses to these challenges.

Charter Teachers' Experiences of Constraints on Adapting Instruction. In the charter system, teachers described how system-wide educational infrastructure constrained them from making substantial adjustments. As Ms. Donovan at Summit explained: "They do not want us, for the most part, tweaking… discussion questions, 'cause they're meant to be rigorous. If we

see that they’re rigorous, they’re meant to be that way.” Similarly, at Enterprise, Ms. Long said “we have very like high expectations and lofty goals for all our kids, which I think we absolutely should. I think many schools have expectations that are too low for kids.” Further, she trusted the charter system’s resources:

> Here, you have best practices given to you. You know the lessons are rigorous. You know that they’re like hitting instructional benchmarks, that they’re driving towards something… All the planners are experienced, and everything is like data-based.

Across both schools, charter teachers mentioned system-level educational infrastructure as the primary factor in their decision-making and that system-provided assessments and routines (e.g., looking-at-student-work protocols) helped them determine student needs.

Nonetheless, two thirds of charter teachers in both schools described the curriculum as occasionally too challenging and fast-paced. Ms. Dooley described some ELA classes as

> Very panicky *[laughter]* for teachers and students every day just trying to get through that much content in 40 minutes and having a lot of decisions where it’s like there are 32 students and we have a small category of students in each of those classes who are at the lowest tier. We just can’t meet their needs in that block. All of our focus is on, if we have any additional focus, is on the students who are in the middle.

Though, charter teachers generally expressed confidence in the “rigor” and “quality” of their educational infrastructure, they also expressed that they struggled to meet all students’ needs.

Urban and Suburban Teachers’ Use of Discretion. Under conditions of high commitment/low control or hybrid educational infrastructure arrangements, urban and suburban teachers’ approaches to addressing students’ diverse needs for ELA instruction often factored in

their perceptions of students’ needs, backgrounds, abilities, and behaviors. As Ms. Jones, from suburban Walt Whitman, explained:

> I feel like that’s my role as the teacher to determine how can I reach the needs of all the different types of levels that I have in the classroom. That’s why I have to think of ways to differentiate the lesson so that those higher kids feel a bit more challenged and that those lower kids don’t feel like, ‘Oh, my gosh, I can’t do this.’

This was a common response among suburban teachers, who described factoring in student engagement and emotions when making instructional decisions.

Further, some suburban teachers referenced their perceptions of students’ backgrounds and abilities when describing their instructional decisions. At Beacon Hill, which served growing numbers of low-income and Latinx students, all four participating teachers described the system’s educational infrastructure, especially the *TCRWP* program, as too hard or inaccessible for their students. Several Beacon Hill teachers believed that students’ backgrounds contributed to the mismatch between system-level curriculum and student needs. As Ms. Becker explained:

> We have so many English language learners. We have a lot of kids whose parents are working two, three jobs, and they’re not home to support them with making sure that they’re reading 40 minutes a night. Making sure that they’re writing. I mean, getting homework back is just ridiculous… this year, I had a very low class. Just the way parents talk to kids. Expose them to things. The kids that Lucy Calkins [*TCRWP*], I think, has written her book for is the upper eastside, upper westside, downtown Manhattan folks. They can get that abstract thinking and they can internalize it, process it, and then produce work for it. If I get a kid here who doesn’t have a lot of these experiences or

> even have the language or the structure to do anything… I feel, very useless to them, at times. It’s not direct. I feel like a lot of them need direct instruction.

In her explanation of why she feels “useless” to her students when using *TCRWP*, Ms. Becker named several shortcomings of her students’ families (e.g., working several jobs, failing to provide homework support, failing to expose children to experiences that support learning). She juxtaposed the abilities of “Manhattan folks” (presumably, higher-income students) to engage in “abstract thinking” with her students’ lack of experiences and language abilities.

Similar patterns of adjustment occurred in both urban schools, particularly in Marigold, which served predominantly low-income, students of color and a large ELL population. Compared to teachers at suburban Beacon Hill, Marigold teachers spoke less of what students “cannot” do and framed their adjustments to system-level educational infrastructure (namely, *Journeys*) as providing appropriate scaffolding to help students access grade-level texts. However, they, like suburban teachers, engaged in a pattern of selecting and combining. Ms. Dobson explained that because half of her grade is comprised of ELLs:

> I pick and choose what I feel is most important for the particular group of students I teach... Some of them are advanced. Some of them are beginners. Some of them are intermediate. They’re all over the place mixed in, so you have to make sure that we’re mindful of those students, but when I have a high population of lower ELLs, I try to focus more on vocabulary and phonics for them.

Whereas both suburban and urban teachers perceived their selective use or adjustments to system-wide educational infrastructure as directly responding to students’ needs, it is also possible that these adaptations lowered teachers’ expectations for ELL and low-income students.

Discussion and Implications

In this study, I analyzed interviews with system leaders and teachers across three public school systems to investigate the interaction between system-level educational infrastructure and teachers' descriptions of their decision-making in the ELA classroom. I found that whether characterized by commitment and/or control approaches, system-level educational infrastructure shaped teachers' understandings of the affordances and constraints on their decision-making and how they could (or could not) adjust their instruction to meet students' unique needs. As inhabited institutionalism suggests, teachers in all three systems were both enabled and constrained by system-level policies; they used system-provided educational infrastructure *and* found ways to make decisions that fit their beliefs and preferred approaches. Whereas charter teachers felt constrained from adapting system-wide educational infrastructure or "lowering the bar" and relied primarily on test score data, suburban and urban teachers felt enabled to fit system-wide educational infrastructure into their preferred approaches and draw on perceptions of students' behaviors, backgrounds, and needs when choosing how to selectively use educational infrastructure and other resources. However, across systems, teachers struggled with differentiation, and some teachers drew on deficit narratives when describing how and why they adapted system-provided educational infrastructure when working with struggling readers. I elaborate on these themes and implications for future research, practice, and policy below.

Implications of Educational Infrastructure Arrangements For (In)Equity

Consistent with decades of research on educational policy implementation, my findings illustrate how system-level policies – in the form of educational infrastructure – "set the conditions" for teachers' decision-making in the ELA classroom (Park & Datnow, 2017), and that teachers often try to fit system-wide approaches into their preferred practices (Coburn, 2004; Everitt, 2012). Whereas the emerging literature on educational infrastructure has documented

school systems’ efforts to build instructional coherence across schools and classrooms (Bryk et al., 2009; Cohen & Bhatt, 2012; Mehta & Fine, 2015; Peurach et al., 2020; Spillane et al., 2019, 2022), it has paid less attention to the normative and cognitive dimensions of educational infrastructure that could perpetuate or disrupt educational inequities. Combining inhabited institutionalism and racialized organizations theory, this study extends prior research on teachers’ implementation of educational reforms and the emerging line of research on educational infrastructure by demonstrating the affordances and limitations of different educational infrastructure arrangements for promoting equitable instruction.

In the suburban system, teachers felt enabled to respond to students’ academic needs by finding or creating supplemental resources and modifying the pace of lessons. Although teachers could have used this discretion to bring in culturally relevant texts and pedagogies, several suburban teachers justified their adjustments with references to low-income and ELL students’ deficits. Urban teachers described their use of educational infrastructure similarly, with Marigold teachers experiencing more intense scrutiny from the system given their school’s turnaround status. Teachers who resisted using educational infrastructure as directed believed that they were responding to ELL and recent immigrant students’ needs, while system leaders characterized this practice as teachers lowering their expectations for students. In this case, the disconnect between system leaders’ and teachers’ understandings of appropriate instruction and differentiation strategies led to tension and teacher resistance. While educational infrastructure arrangements characterized by higher commitment and lower control could permit teachers to respond more quickly to their perceptions of students’ needs, it is also possible that these arrangements enabled teachers to lower their expectations for students from historically marginalized backgrounds (Bertrand & Marsh, 2015; Fraatz, 1987; Milner, 2014; Ray, 2019).

In the charter system, teachers felt constrained from providing students with lower-level texts or slowing down the pace of instruction despite their observations of student behaviors, levels of engagement, and emotions (e.g., stress and frustration). Although this prevented teachers from lowering their academic expectations for students from historically marginalized backgrounds, teachers also described how the charter system's educational infrastructure created a stressful environment for students and teachers and failed to support teachers in meeting all students' needs. Moreover, while the charter system claimed to maintain high expectations for low-income, students of color, these expectations were primarily tied to standardized test scores. Research has shown that while no excuses schools have shown improvements in students' test scores (Cheng et al., 2017), they also promote disciplinary practices and pedagogical approaches that emphasize compliance and control, rather than creativity, critical thinking, and independence (Golann, 2015). As racialized organizations theory argues, such practices that appear to be "data-driven" could, instead, legitimate the unequal distribution of resources, such as instructional offerings, rich texts, and time on creative tasks (Ray, 2019).

Overall, across systems, teachers were differentially enabled and constrained by their educational infrastructures from infusing their perceptions of students' needs, behaviors, and backgrounds into their instructional decision-making. However, many teachers appeared to struggle with meeting students' instructional needs without drawing on deficit-based narratives around student performance. Scholars have acknowledged that educational infrastructure only serves to improve instruction and reduce disparities if the infrastructure is well designed by systems and used effectively by teachers (Bryk et al., 2010; Cohen et al., 2013). However, these findings illustrate how, to combat educational inequities, school systems must *explicitly* design

educational infrastructures to disrupt deeply entrenched and taken-for-granted belief systems, practices, and structures that perpetuate inequities (e.g., deficit modes of differentiation).

The Challenge of Designing and Supporting Equitable ELA Instruction

Across schools and systems, teachers grappled with a similar challenge – their dual responsibilities to teach a standardized, grade-level curriculum and meet students' unique needs. Although system leaders discussed opportunities for teachers to differentiate instruction to meet their students' diverse needs, teachers appeared less confident and clear on how to do so. This disconnect is striking given the range of supports system leaders articulated providing for ELA instruction, including co-teaching models, instructional coaches, supplemental resources, and professional development opportunities. That this similar challenge surfaced among teachers ranging in levels of teaching experience (3-30 years) and across different types of school systems corroborates prior research about this dilemma being a fixture of teacher's work (Fraatz, 1987; Pak et al., 2020; Weiss, 1990). It also suggests that systems' educational infrastructure redesign efforts neglected to deeply engage teachers in professional learning on *how* to differentiate instruction. The persistence of deficit models in teachers' descriptions of students suggests that these efforts also neglected to invest in or design professional development for teachers to build their capacities in asset-based (López, 2017) or culturally responsive (Gay, 2013) pedagogies.

While common learning standards (e.g., the CCSS) provide broad signals about what to teach and have guided school systems' educational infrastructure redesign efforts (Peurach et al., 2019; Spillane et al., 2019), they have largely not been designed to assist teachers in interpreting these standards to address the varied needs students bring into the classroom (Milner, 2014). Further, differentiation as a practice is often covered minimally by teacher education programs and school or district professional development (Dixon et al., 2014). Thus, school systems'

ongoing and future efforts to redesign and mobilize their educational infrastructures to improve instruction and reduce disparities should focus on providing teachers with strategies and resources for anti-deficit modes of addressing students’ diverse needs. This is particularly relevant for elementary ELA teachers, who are often trained to group students by reading ability (Jensen, 2021; Park & Datnow, 2017).

Some school systems’ recent educational infrastructure redesign efforts have begun to infuse professional learning around differentiation and culturally responsive pedagogy into the design and implementation of their instructional shifts. In 2021, Chicago Public Schools launched its first-ever universal, multi-content, K-12 curriculum, “Skyline” with expressed goals of addressing educational inequity through the provision of high-quality and culturally responsive curricula (Chicago Public Schools, 2022). In addition to creating a universally available curriculum for all district schools, professional learning opportunities for teachers around implementing Skyline have been designed to familiarize teachers with the content of the curriculum and to develop key pedagogical moves that foster equitable learning opportunities for all students (Chicago Public Schools, 2022). Other districts have piloted approaches to differentiated instruction in elementary ELA that frequently assess and regroup students to avoid the detrimental effects of inflexible grouping. One such approach, the Assessment to Instruction (A2I), involves administering diagnostic reading assessments to students every eight weeks to identify strengths and weaknesses in multiple skills (e.g., decoding, fluency, comprehension). The program then suggests the amount of individual, small-group, and independent work time each student needs and groups students by skills instead of overall reading levels (Sparks, 2018).

More research is needed to determine the largescale and longitudinal effects of Skyline on teaching and learning, student engagement, and educational equity in CPS differentiation, and

the effects of approaches like A2I on students’ reading growth and teacher efficacy regarding differentiation. However, the recent implementation of these initiatives illustrates how educational infrastructure can be deliberately designed to include non-deficit modes of differentiation, culturally responsive curriculum, and training on equity-centered pedagogy.

Limitations

The breadth of the larger comparative study resulted in a smaller sample size of teachers in each focal school, and teachers were selected to participate in interviews by their principals, not by the research team. Although teachers in this study represent a wide range of personal and professional backgrounds, teaching experiences, and views of their system’s educational infrastructure, their perspectives may not be representative of each focal school’s staff. Further, it is possible that I only noted four resisters because those who disagreed with their system’s instructional shifts may have left or were asked to leave. Nonetheless, all participating teachers in this study had been working in their respective school systems for at least three years, during which all systems had redesigned their educational infrastructures for ELA. Even in the charter system, participating teachers experienced a shift from what one teacher described as “skeleton” lesson plans to their new daily lesson resources. Thus, participating teachers did not enter their school systems knowing what their educational infrastructures would look like in their current forms. My findings, then, reflect how teachers made sense of and learned to manage their current educational infrastructure, which they did not opt into when applying to work at their schools.

Additional limitations stem from the research team’s inability to collect significant observational or longitudinal data. Though this study focuses primarily on how teachers construct and explain their instructional decisions, it does not capture teachers’ situated behaviors or decision-making in practice. However, interviews that prompted teachers to

elaborate on their instructional decision-making and use of educational infrastructure surfaced unobservable insights about how teachers choose among multiple resources or approaches and how they perceive their students’ needs.

Conclusion

This study explored the interaction between system-level educational infrastructure building efforts and teachers’ attempts to meet students’ unique needs in the elementary ELA classroom while implementing grade-level curriculum. Educational infrastructure arrangements characterized by varying levels of commitment and control approaches (Rowan, 1990) created different sets of conditions for teacher decisions-making. Across schools and systems, teachers perceived system-wide educational infrastructure as constraining and enabling their instructional decisions, and the extent to which they could respond to their perceptions of students’ needs. Despite differences in system-provided educational infrastructure and expectations for its use, teachers across all systems experienced similar challenges around meeting students’ diverse needs in the elementary ELA classroom.

This study cannot speak to whether teachers who selectively used or resisted educational infrastructure were resisting “good” changes or whether they adapted educational infrastructure to improve upon these changes. However, my findings show how system-level educational infrastructure shaped the boundaries of teachers’ decision-making and possibilities for (in)equitable education. Thus, when designing educational infrastructure to support high-quality and equitable elementary ELA instruction system-wide, school systems should focus their efforts on developing teachers’ mindsets and capabilities to deliver asset-based, equity-centered, and culturally responsive instruction and to avoid deficit modes of differentiation.

References

Ball, D. L. (2018). *Just dreams and imperatives: The power of teaching in the struggle for public education* [Presidential Address]. American Educational Research Association Annual Meeting, New York.

Bertrand, M., & Marsh, J. A. (2015). Teachers' Sensemaking of Data and Implications for Equity. *American Educational Research Journal*, *52*(5), 861–893. https://doi.org/10.3102/0002831215599251

Binder, A. (2007). For love and money: Organizations' creative responses to multiple environmental logics. *Theory and Society*, *36*(6), 547–571. https://doi.org/10.1007/s11186-007-9045-x

Boaler, J. (2011). Changing students' lives through the de-tracking of urban mathematics classrooms. *Journal of Urban Mathematics Education*, *4*(1), 7–14.

Bridwell-Mitchell, E. N., & Sherer, D. G. (2017). Institutional Complexity and Policy Implementation: How Underlying Logics Drive Teacher Interpretations of Reform. *Educational Evaluation and Policy Analysis*, *39*(2), 223–247. https://doi.org/10.3102/0162373716677567

Bryk, A. S., Sebring, P. B., Allensworth, E., Luppescu, S., & Easton, J. Q. (2010). *Organizing schools for improvement: Lessons from Chicago*. University Of Chicago Press.

Cheng, A., Hitt, C., Kisida, B., & Mills, J. N. (2017). "No Excuses" Charter Schools: A Meta-Analysis of the Experimental Evidence on Student Achievement. *Journal of School Choice*, *11*(2), 209–238. https://doi.org/10.1080/15582159.2017.1286210

Chicago Public Schools. (2022). *Skyline*. Chicago Public Schools. Retrieved September 5, 2022, from https://www.cps.edu/sites/skyline/

Coburn, C. E. (2001). Collective Sensemaking about Reading: How Teachers Mediate Reading Policy in Their Professional Communities. *Educational Evaluation and Policy Analysis*, *23*(2), 145–170. https://doi.org/10.3102/01623737023002145

Coburn, C. E. (2004). Beyond Decoupling: Rethinking the Relationship Between the Institutional Environment and the Classroom. *Sociology of Education*, *77*(3), 211–244. https://doi.org/10.1177/003804070407700302

Coburn, C. E. (2005). Shaping Teacher Sensemaking: School Leaders and the Enactment of Reading Policy. *Educational Policy*, *19*(3), 476–509. https://doi.org/10.1177/0895904805276143

Cohen, D. K. (1990). A Revolution in One Classroom: The Case of Mrs. Oublier. *Educational Evaluation and Policy Analysis*, *12*(3), 311–329. https://doi.org/10.3102/01623737012003311

Cohen, D. K., & Bhatt, M. P. (2012). The Importance of Infrastructure Development to High-Quality Literacy Instruction. *The Future of Children*, *22*(2), 117–138.

Cohen, D. K., Peurach, D. J., Glazer, J. L., Gates, K. E., & Goldin, S. (2013). *Improvement by design: The promise of better schools*. University Of Chicago Press.

Cohen, D. K., Spillane, J. P., & Peurach, D. J. (2018). The Dilemmas of Educational Reform. *Educational Researcher*, *47*(3), 204–212. https://doi.org/10.3102/0013189X17743488

Corbin, J., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*, *13*(1), 3–21.

Darling-Hammond, L. (2014). Foreward. In H. R. Milner & K. Lomotey (Eds.), *Handbook of Urban Education* (pp. xi–xiii). Routledge.

Datnow, A., & Castellano, M. (2000). Teachers’ Responses to Success for All: How Beliefs, Experiences, and Adaptations Shape Implementation. *American Educational Research Journal*, *37*(3), 775–799.

Desimone, L. (2006). Toward a more refined theory of school effects: A study of the relationship between professional community and the teaching of mathematics in early elementary school. In W. Hoy & C. Miskel (Eds.), *Contemporary Issues in Educational Policies and School Outcomes* (pp. 87–133). Information Age Publishing.

Diamond, J. B., & Posey-Maddox, L. (2020). The Changing Terrain of the Suburbs: Examining Race, Class, and Place in Suburban Schools and Communities. *Equity & Excellence in Education*, *53*(1–2), 7–13. https://doi.org/10.1080/10665684.2020.1758975

Diamond, J. B., Randolph, A., & Spillane, J. P. (2004). Teachers’ Expectations and Sense of Responsibility for Student Learning: The Importance of Race, Class, and Organizational Habitus. *Anthropology & Education Quarterly*, *35*(1), 75–98. https://doi.org/10.1525/aeq.2004.35.1.75

Diamond, J. B., & Spillane, J. P. (2004). High-stakes accountability in urban elementary schools: Challenging or reproducing inequality. *The Teachers College Record*, 1145–1176.

Dixon, F. A., Yssel, N., McConnell, J. M., & Hardin, T. (2014). Differentiated Instruction, Professional Development, and Teacher Efficacy. *Journal for the Education of the Gifted*, *37*(2), 111–127. https://doi.org/10.1177/0162353214529042

Everitt, J. G. (2012). Teacher Careers and Inhabited Institutions: Sense-Making and Arsenals of Teaching Practice in Educational Institutions. *Symbolic Interaction*, *35*(2), 203–220.

Everitt, J. G. (2018). *Lesson plans: The institutional demands of becoming a teacher*. Rutgers University Press.

Fraatz, J. M. B. (1987). *The politics of reading: Power, opportunity, and prospects for change in America’s public schools*. Teachers College Press.

Gay, G. (2013). Culturally Responsive Teaching Principles, Practices, and Effects. In *Handbook of Urban Education*. Routledge.

Golann, J. W. (2015). The Paradox of Success at a No-Excuses School. *Sociology of Education*, *88*(2), 103–119. https://doi.org/10.1177/0038040714567866

Hallett, T., & Ventresca, M. J. (2006). Inhabited Institutions: Social Interactions and Organizational Forms in Gouldner’s “Patterns of Industrial Bureaucracy.” *Theory and Society*, *35*(2), 213–236. https://doi.org/10.1007/s11186-006-9003-z

Hodge, E. M. (2019). “Common” Instruction? Logics of Ability and Teacher Decision Making Across Tracks in the Era of Common Standards. *American Educational Research Journal*, *20*. https://doi.org/10.3102/0002831218803328

Hopkins, M., Spillane, J. P., Jakopovic, P., & Heaton, R. M. (2013). Infrastructure Redesign and Instructional Reform in Mathematics: Formal Structure and Teacher Leadership. *The Elementary School Journal*, *114*(2), 200–224. https://doi.org/10.1086/671935

Jensen, B. (2021). Advancing the Science of Teaching Reading Equitably. *Reading Research Quarterly*, *56*(S1), S69–S84. https://doi.org/10.1002/rrq.409

Ladson-Billings, G. (2006). From the Achievement Gap to the Education Debt: Understanding Achievement in U.S. Schools. *Educational Researcher*, *35*(7), 3–12. https://doi.org/10.3102/0013189X035007003

Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher Sorting and the Plight of Urban Schools: A Descriptive Analysis. *Educational Evaluation and Policy Analysis*, *24*(1), 37–62. https://doi.org/10.3102/01623737024001037

López, F. A. (2017). Altering the Trajectory of the Self-Fulfilling Prophecy: Asset-Based Pedagogy and Classroom Dynamics. *Journal of Teacher Education*, *68*(2), 193–212. https://doi.org/10.1177/0022487116685751

McLaughlin, M. W., & Talbert, J. E. (1993). *Contexts that matter for teaching and learning: Strategic opportunities for meeting the nation's educational goals* (pp. 1–32). Center for Research on the Context of Secondary School Teaching.

Mehta, J. (2013). How Paradigms Create Politics: The Transformation of American Educational Policy, 1980—2001. *American Educational Research Journal*, *50*(2), 285–324.

Mehta, J., & Fine, S. (2015). Bringing values back in: How purposes shape practices in coherent school designs. *Journal of Educational Change*, *16*(4), 483–510. https://doi.org/10.1007/s10833-015-9263-3

Miles, M., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis* (3rd ed.). Sage Publications Ltd.

Milner, H. R. (2014). Scripted and Narrowed Curriculum Reform in Urban Schools. *Urban Education*, *49*(7), 743–749. https://doi.org/10.1177/0042085914549685

Pak, K., Polikoff, M. S., Desimone, L. M., & Saldívar García, E. (2020). The Adaptive Challenges of Curriculum Implementation: Insights for Educational Leaders Driving Standards-Based Reform. *AERA Open*, *6*(2), 2332858420932828.

Park, V., & Datnow, A. (2017). Ability Grouping and Differentiated Instruction in an Era of Data-Driven Decision Making. *American Journal of Education*, *123*(2), 281–306. https://doi.org/10.1086/689930

Parsons, S. A., Vaughn, M., Scales, R. Q., Gallagher, M. A., Parsons, A. W., Davis, S. G., Pierczynski, M., & Allen, M. (2018). Teachers' Instructional Adaptations: A Research

Synthesis. *Review of Educational Research*, *88*(2), 205–242. https://doi.org/10.3102/0034654317743198

Peurach, D. J., Cohen, D. K., Yurkofsky, M., & Spillane, J. P. (2019). From mass schooling to education systems: Changing patterns in the organization and management of instruction. *Review of Research in Education*, *43*.

Peurach, D. J., & Neumerski, C. M. (2015). Mixing metaphors: Building infrastructure for large scale school turnaround. *Journal of Educational Change*, *16*(4), 379–420. https://doi.org/10.1007/s10833-015-9259-z

Peurach, D. J., Yurkofsky, M. M., Blaushild, N., Sutherland, D. H., & Spillane, J. P. (2020). Analyzing Instructionally Focused Education Systems: Exploring the Coordinated Use of Complementary Frameworks. *Peabody Journal of Education*, *0*(0), 1–20. https://doi.org/10.1080/0161956X.2020.1800172

Ray, V. (2019). A Theory of Racialized Organizations. *American Sociological Review*, *84*(1), 26–53. https://doi.org/10.1177/0003122418822335

Rowan, B. (1990). Chapter 7: Commitment and Control: Alternative Strategies for the Organizational Design of Schools. *Review of Research in Education*, *16*(1), 353–389. https://doi.org/10.3102/0091732X016001353

Shirrell, M. (2016). New principals, accountability, and commitment in low-performing schools. *Journal of Educational Administration*, *54*(5), 558–574. https://doi.org/10.1108/JEA-08-2015-0069

Sparks, S. D. (2018). Are Classroom Reading Groups the Best Way to Teach Reading? Maybe Not. *Education Week*. https://www.edweek.org/teaching-learning/are-classroom-reading-groups-the-best-way-to-teach-reading-maybe-not/2018/08

Spillane, J. P., Blaushild, N. L., Neumerski, C. M., Seelig, J. L., & Peurach, D. J. (2022). Striving for Coherence, Struggling With Incoherence: A Comparative Study of Six Educational Systems Organizing for Instruction. *Educational Evaluation and Policy Analysis*, *44*(4), 567–592. https://doi.org/10.3102/01623737221093382

Spillane, J. P., & Burch, P. (2006). The institutional environment and instructional practice: Changing patterns of guidance and control in public education. *The New Institutionalism in Education*, *6*, 87–102.

Spillane, J. P., Reiser, B. J., & Reimer, T. (2002). Policy Implementation and Cognition: Reframing and Refocusing Implementation Research. *Review of Educational Research*, *72*(3), 387–431. https://doi.org/10.3102/00346543072003387

Spillane, J. P., Seelig, J. L., Blaushild, N. L., Cohen, D. K., & Peurach, D. J. (2019). Educational System Building in a Changing Educational Sector: Environment, Organization, and the Technical Core. *Educational Policy*, *33*(6), 846–881. https://doi.org/10.1177/0895904819866269

Turner, E. O. (2020). Suddenly Diverse: How School Districts Manage Race and Inequality. In *Suddenly Diverse*. University of Chicago Press. https://doi.org/10.7208/9780226675534

Weick, K. E. (1995). *Sensemaking in organizations*. SAGE Publications Ltd.

Weiss, J. A. (1990). Control in school organizations: Theoretical perspectives. *Choice and Control in American Education*, *1*, 91–134.

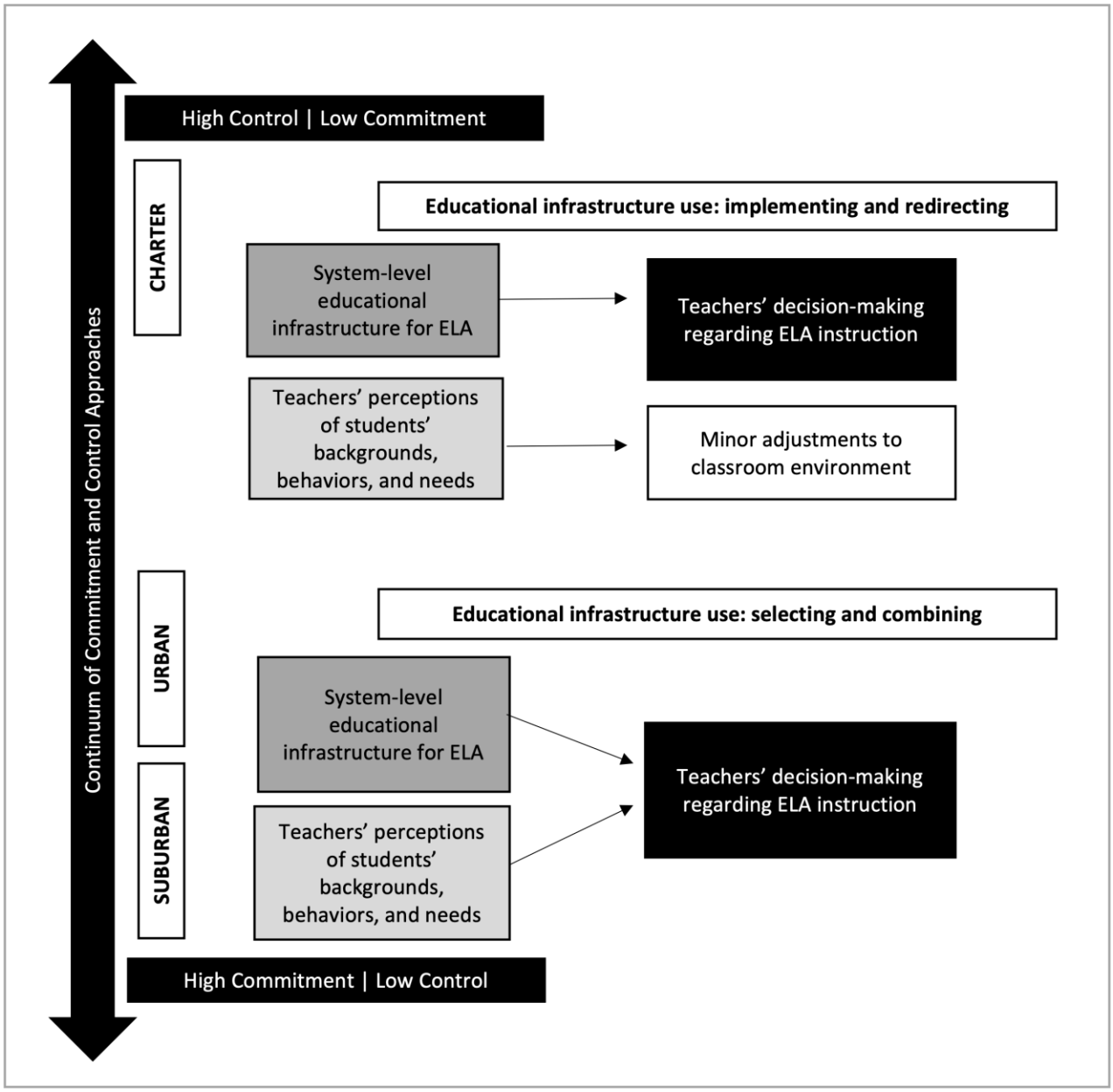
Weiss, R. S. (1995). *Learning From Strangers: The Art and Method of Qualitative Interview Studies*. Simon and Schuster.

Woulfin, S. L. (2015). Highway to reform: The coupling of district reading policy and instructional practice. *Journal of Educational Change*, *16*(4), 535–557. https://doi.org/10.1007/s10833-015-9261-5

Tables and Figures

Figure 1

Relations among educational infrastructure arrangements and teacher decision-making



Note. This figure illustrates the relationship between system-level educational infrastructure arrangements, teachers’ perceptions of students’ backgrounds, behaviors, and needs, and teacher decision-making in the ELA classroom, including teachers’ use of educational infrastructure.

Table 1

Student Enrollment and Demographics by System and School

	SYSTEM		
	Charter	Suburban	Urban
Student Enrollment	8,000	10,000	30,000
Student Demographics (%)			
Black	72	22	48
Latinx	26	46	19
White	1	27	20
Other race	1	5	13
Low-income	83	56	82
ELL	4.2	11	15
Students with disabilities	14	14	22

	SCHOOL					
	Enterprise	Summit	Walt Whitman	Beacon Hill	East Fillmore	Marigold
Student Enrollment	1000	1000	500	550	900	700
Performance Level	Higher	Lower	Higher	Lower	Higher	Lower
Student Demographics (%)						
Black	85	95	27	14	48	44
Latinx	13	4	27	67	18	17
White	1	0	41	13	19	13
Other Race	1	1	6	6	14	25
Low-income	80	77	31	67	76	92
ELL	1	0	4	29	9	36
Students with disabilities	16	17	10	14	18	14

Table 2

System and School Sample

	SYSTEM						
	Charter		Suburban		Urban		Total
Leaders (N)	11		9		12		32
Interviews (N)	11		9		12		32
	SCHOOL						
Schools	Enterprise	Summit	Walt Whitman	Beacon Hill	East Fillmore	Marigold	Total
Teachers (N)	3	3	4	4	5	5	24
Interviews (N)	4	6	7	8	9	9	43

Note. Five teachers were unable to complete follow-up interviews.

Table 3

Educational Infrastructure (EI) Arrangements and Core Components by System

	SYSTEM		
	Charter	Urban	Suburban
Elementary ELA Curriculum	System-created daily lesson resources	*Journeys; Step up to Writing*	*Teachers College Readers and Writers Project*
E.I. Core Components			
System-wide daily lesson plans	Yes	No	No
System-wide pacing guide	Yes	Yes	No
Restrictions on use of supplemental materials	Yes	Some	No
School-based instructional coaching	Yes	Yes	Yes
System-wide professional development	Yes	Yes	Yes
E.I. Arrangement	High Control	Hybrid	High Commitment

Appendix A

Selected Codes from School Systems Study Codebook

Infrastructure Designing & Guiding: *Designing for* and *guiding* schools' day-to-day work, as through instructional resources (e.g., curriculum materials, student assessments), organizational resources (time; instructional grouping; class size, ability grouping, departmentalization), and vision/mission/goals. Includes any effort, regardless of how specific, to try to guide learning, such as system level instructional goals. Must be deliberate design. Does *not* include professional development (which is coded under Quality Control).

Infrastructure Quality Control: ways in which the system (or school) is working towards improving or maintaining quality (e.g., as via analyses of instructional processes and outcomes), either specifically about instructional practice improvement (e.g., as via formal and informal professional learning opportunities, evaluation) or outside of instruction.

Infrastructure Formal Structure: (school and system), including roles (e.g., teacher, leader, coach, designer), responsibilities, reporting relationships/line of command, routines, and standing meetings/engagements. Looks at who does what in the system.

Infrastructure Social Structure: (school and system), including "culture" (e.g., as described/used by system members), political dynamics, influence patterns, etc. Can be explicit or indirect references to group norms and culture. This includes individual perspectives, such as personal descriptions of leadership, as well as group perspectives on collective interactions. Includes both positive and negative descriptions of culture.

Infrastructure Recruitment, Retention, & Dismissal: Recruiting and selecting teachers and other professionals, and the process of retaining teachers & other professionals in the system. Includes union contract negotiations. May include paths to becoming principals or administrators within the system. Mentions of teacher dismissal processes are also included here. Includes personal stories of the hiring process. Does *not* include teacher or administrator evaluations unless they are explicitly connected to recruitment or retention.

Instruction Practice: This captures only teachers' discussions of their own practice – describing their lesson, processes, materials, teaching and learning occurring in the classroom, student responses, etc. This code captures all discussions of an individual's instructional practice.