

Considerations:

School Leadership



Principal Leadership in a Virtual Environment

by

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Table of Contents

- Executive Summary 4
- Introduction. 11
- Chapter 1: Methodology 14
- Chapter 2: Powerful Learning in a Virtual Setting 17
 - Meaningful use. 17
 - When students work alone or in groups 17
 - Supporting teachers’ work with students 18
 - Giving teachers useful information 19
 - Inclusive access 19
 - Closing the digital access gap 19
 - Disrupting systemic bias in virtual learning 19
 - School leadership 20
 - Selecting the right tools 20
 - Developing improvement initiatives 21
- Chapter 3: Three Key Questions for Districts 23
 - What does a principal need to know and be able to do to effectively lead in a virtual context? . 23
 - Principals need specific skills and expertise to lead in a virtual environment 23
 - Effective principals apply an equity lens to all their efforts, including virtual learning 26
 - What on-the-job supports do these principals need? 27
 - Principals need support for innovation and risk-taking 27
 - Collaboration is a valued form of support 28
 - What conditions promote the development of a large cohort of principals who are effective leaders in a virtual context? 29
 - District leaders are visible in the virtual environment. 29
 - Professional development curricula is rigorous and responsive to the needs of virtual leadership 30
- Chapter 4: Building a Pipeline of Principals Who Can Lead in a Virtual Environment 34
 - Domain 1: Leader standards 35

Domain 2: High-quality pre-service principal preparation.	37
Domain 3: Selective hiring and placement of principals	39
Domain 4: On-the-job evaluation and support	40
Domain 5: Principal supervisors	42
Domain 6: Leader tracking systems.	44
Domain 7: Systems and sustainability.	45
Chapter 5: Future Research	48
References	49
Appendix A: Characteristics of Interview Participants and Their Districts	55
Appendix B: Interview Protocols	57
Appendix C: Strategies for Districts to Consider and Questions for Reflection	59

This publication is part of an occasional Wallace series titled Considerations, in which we invite leading scholars and other experts to share insights based on research and theory on issues of importance to the fields that the Foundation supports.

Executive Summary

While virtual learning environments are not new for many school leaders, the unexpected shift to remote learning during the COVID-19 pandemic has resulted in intensified focus on the need for school leadership to ensure equitable learning in virtual environments. When considering virtual learning for the future, new and current adopters will have to make an important decision. Will principals revert to seeing virtual learning as supplemental to and separate from the core effort to improve instruction? Or, will leaders view virtual learning as essential to the classroom, necessitating its purposeful integration into plans to foster high-quality, equitable learning, guided by well-defined strategies and the needs of their students?

Commissioned by The Wallace Foundation, which supports efforts to promote effective school leadership, this report sets out to define what high-quality, equitable learning looks like in a virtual environment. It poses questions for school district leaders to ask if they want to develop principals who can lead their schools to this type of learning. It also describes strategies for districts to consider in efforts to develop a whole pipeline of principals adept at high-quality, equitable virtual learning—using a definition of an “aligned, comprehensive principal pipeline” that emerged through research and field work funded by The Wallace Foundation. The report is based on an examination of research literature supplemented by interviews with 11 principals and administrators knowledgeable about virtual learning. It also draws on Digital Promise’s experience in working with schools and school districts. The final chapter looks at topics that merit further exploration in the areas of virtual learning, equity, and school leadership.

Related to that, we note that leading for effective, equitable virtual learning is a relatively new subject, with a still-emerging research base. In light of that, this report is an early effort at providing insights into how districts might cultivate a corps of effective, equity-minded principals who have also mastered leading virtual learning and operating in a virtual environment. There is still much more to learn.

Powerful learning

We call high-quality, equitable learning with technology “powerful learning,” experiences that engage learners’ hearts and minds. Powerful learning is characterized by being personal and accessible, collaborative and connected, authentic and challenging, and inquisitive and reflective. Further, based on Digital Promise’s experience in learning sciences research and work with districts over the past decade, we argue that powerful learning can be achieved through a combination of three factors, each of them indispensable: meaningful use, inclusive access, and school leadership.

Meaningful use

Meaningful use describes how devices and technology tools are used. Is technology simply a means to delivering supplementary materials to in-person or live instruction, or is it a means to helping students achieve learning goals or to enabling previously impossible interactions? Technology can provide unique opportunities for students, such as serious games, interactive models and visualizations, and assistive technologies. Likewise, teachers can benefit from live feedback and directed lesson planning. Finally, teachers and students can benefit from new ways to connect, not just over assignments and curriculum but also through genuine and meaningful personal interactions. When meaningful uses of technology are promoted and used by students and teachers, a school or district's integrated plan to promote powerful learning can be more readily achieved.

Inclusive access

All students need full access to the technology necessary to participate in authentic and engaging learning opportunities, and teachers need to be skilled in creating and delivering those experiences. Districts and schools can integrate powerful learning throughout their instructional programs, with attention to key enabling conditions—including reliable access, in school and wherever else needed, to the devices, internet, and supports that allow every student to meaningfully participate.

School leadership

Integrating virtual learning throughout the core of instruction requires leadership, which begins with a principal making well-informed choices about which technologies are most appropriate for the school's population. This necessitates awareness of and access to resources that can help in smart decision-making, such as guides, meta-analyses, and reviews. Decision-making also requires knowledge of how choices will serve specific schools, rather than how they would serve an "average" population. Finally, leaders need to be prepared for a period of continuous improvement during and after implementation, setting clear improvement goals, metrics, and processes for monitoring progress towards goals, as well as getting buy-in from teachers and others. The mere availability of a digital tool will solve nothing on its own. Only after technology has been aligned with other curricular directives and improvement goals, and after staff have the support they need to help this alignment take place, should schools expect to see meaningful powerful learning take hold.

Three key questions

When considering how to develop principals with the skills necessary to effectively implement virtual learning, district leaders might consider the following questions:

1. **What does a principal need to know and be able to do to effectively lead in a virtual**

context? Research suggests that virtual learning requires principals who are flexible and adaptive, receptive and responsive to the frequent changes that virtual environments often bring. In their capacity as organizational leaders, they will need to build a virtual community and attend to the support needs of staff and students, particularly those belonging to disadvantaged communities, as they decide how to integrate virtual learning into ongoing (not just emergency) instruction. They must be aware of how being online can affect the well-being of staff and students and accordingly address health and safety. Principals should be able to work alongside their teachers in areas such as piloting new tech tools and experimenting with new teaching techniques. They also need to be on top of administrative considerations such as protecting student data privacy.

2. **What on-the-job supports do these principals need?** To create a school culture for technology use, principals should have support for innovation and risk-taking, as well as their continuous improvement efforts. Supports may include principal professional learning communities or other social forms of collegial support, specifically to address the challenges of leading in a virtual environment. The support system should take account of how principal needs and preferences vary, and how the schools and populations they work with differ. Principals also need support for the numerous everyday issues that arise in virtual learning environments, which may require new leadership actions and behaviors.
3. **What conditions promote the development of a large cohort of principals who are effective leaders in a virtual context?** District leader actions and district operations help create the culture and capacity necessary for effective virtual learning leadership. Districts can build capabilities through rigorous professional learning that provides job candidates with timely, relevant, technology-focused skills. Hiring processes may need to be updated to offer authentic opportunities to demonstrate competencies in leading a virtual learning environment, many of which will not be represented by formal certifications. To keep preparation, hiring, and placement up to date and functioning properly given the increased emphasis on virtual learning, the district may have to update its preparation, hiring, and placement systems.

A pipeline of principals who can lead for effective, equitable virtual learning

Research indicates that “comprehensive, aligned” pipelines help establish high-quality school leadership—“comprehensive” because their parts, or domains, cover the span of talent development actions needed to shape and support a principal; “aligned” because these domains reinforce one another. This chart lists seven domains of comprehensive, aligned pipelines. Each one includes a set of actions districts can consider taking to develop principals capable of leading their schools to achieve high-quality, equitable virtual learning.

Domains of the Principal Pipeline	Strategies for Districts to Consider
<p>Domain 1: Leader standards</p>	<ul style="list-style-type: none"> • Design leader standards to align virtual learning with districts’ overall goals for high-quality teaching and learning. If those goals are still under development, consult trusted resources such as the National Standards for Quality Online Teaching. • Include leader standards that reflect human development, relationship skills, and organizational skills—such as creating a safe culture to explore digital tools— while ensuring that digital resources are sufficient and scalable, and leading and navigating change with agility. • Include equity considerations for the virtual environment in leader standards, such as ensuring that all students have access to learning devices, internet connectivity, and teachers who are prepared to work with technology in meaningful ways. • In addition to the Professional Standards for Education Leaders, consult trusted resources such as the International Society for Technology in Education’s Standards for Education Leaders and the Continuous Learning Rubric, which are specifically designed to support leadership in virtual environments. • Arrange virtual or hybrid “town hall” style meetings with community members to share goals, plans, and expectations regarding virtual learning, and use that input to inform the development of leader standards. These meetings can also give stakeholders an opportunity to review and provide feedback on the standards related to virtual learning as they are developed.

<p>Domain 2: High-quality pre-service principal preparation</p>	<ul style="list-style-type: none"> • Collaborate with regional pre-service programs to ensure that their curriculum meets the virtual learning needs of district schools. • Advocate for pre-service training led by or including experts who have real-world experience leading in a virtual context. • Benchmark local pre-service programs against what is happening statewide or nationwide in preparing leaders to thrive in the virtual context. • Supplement pre-service preparation with district-wide training that addresses the district's specific goals for equity-centered leadership in a virtual environment. • Emphasize the connection between equity and quality of instruction by paying attention to redesigns of pre-service that deeply integrate equity with the virtual environment. • Prepare principals to be agile and adaptable by working with programs that include change management coursework as part of principal preparation.
<p>Domain 3: Selective hiring and placement of principals</p>	<ul style="list-style-type: none"> • Identify and plan for how a virtual hiring space might advantage or disadvantage candidates. • Recognize biases, especially those related to technology and virtual learning, in the hiring committee as a part of the hiring process. Consider using exercises such as explorations of social identities from the National Museum of African American History and Culture or race and identity journey maps from the Rock Dove Collective to help the committee reflect on privilege and power as they relate to hiring. • Revise interview questions to reflect standards for technology and equity-centered leadership. • Provide authentic opportunities for candidates to demonstrate competencies relevant to equity-focused leadership in a virtual environment.

<p>Domain 4: On-the-job evaluation and support</p>	<ul style="list-style-type: none"> • Align principal goals and evaluation with standards for leadership in the virtual context and link principal goals to current district initiatives. • Use multiple measures to assess principal performance and regularly review these measures to ensure that they do not unfairly disadvantage principals who work in under-resourced schools. • Couple evaluation with targeted, timely, formative feedback that supports innovation and risk-taking with new technologies. • Include principals in ongoing training on the ways that technology can be leveraged to support student learning.
<p>Domain 5: Principal supervisors</p>	<ul style="list-style-type: none"> • Leverage technology to build trusting relationships with principals. • Provide principals with job-embedded supports, such as personalized learning plans, professional learning opportunities, and coaching on equity-focused leadership. Consult the Online Professional Learning Quality Checklist from the Office of Educational Technology at the U.S. Department of Education for guidance on determining the effectiveness of specific virtual learning opportunities and where to invest resources. • Gain understanding of school context and the types of support principals need for instructional leadership in a virtual context by spending time visiting virtual classrooms. • Supplement one-on-one support from a principal supervisor with social supports, such as virtual professional learning communities or communities of practice. Consult the Office of Educational Technology’s resource, <i>The Future Ready District: Professional Learning Through Online Communities of Practice</i>, for guidance.
<p>Domain 6: Leader tracking systems (LTS)</p>	<ul style="list-style-type: none"> • Consider how the types of data collected in the LTS align with standards for leadership in the virtual context. • Conduct inventories of data currently collected by the LTS and add opportunities to track evidence of equity-centered, virtual leadership. • Determine how the new data gathered in the LTS will be sorted and weighted in decision-making about hiring and placement.

Domain 7: Systems and sustainability

- Create processes for ongoing communication regarding the alignment of the pipeline with goals for equity and virtual learning leadership.
- Identify and apply equity-focused frameworks and tools when making changes to the pipeline to support virtual leadership.

As districts conceptualize how to develop a comprehensive, aligned principal pipeline that can produce and support highly-effective leaders who can lead with and for equity, they can use this guide to consider how that pipeline needs to take into account the growing expectations of principals to operate, at times, in a virtual context.

Introduction

Digital technology has become increasingly central to teaching and learning. Before the COVID-19 pandemic, technology was already becoming more prevalent in schools nationwide. When the pandemic necessitated a shift to virtual learning environments, schools rapidly accelerated their technology implementation. Educators quickly adopted digital learning methods and materials, and principals quickly learned how to support their teachers and communities. Before the pandemic, the details around technology use might have been delegated to a chief technology officer or chief information officer. With the rapid shift to virtual learning, all school leaders had to take responsibility for this knowledge.

“Digital Promise, a nonprofit founded in 2010, was created with the mission to accelerate innovation in education and improve opportunities to learn through effective use of technology in schools. Over the years, in collaboration with education leaders, researchers, entrepreneurs, and developers, the organization has worked with over 600 schools and 173 school districts nationwide to impact over 3.8 million students.”

Digital Promise has learned from districts that virtual learning environments will persist, in some form, even as schools return to face-to-face instruction. Many students and parents in under-resourced communities have found technology can offer advantages for their learning—advantages they would like to maintain as the pandemic subsides. Increased access to tools for diagnostic assessment and progress monitoring has helped teachers address learner variability; virtual parent conferences, orientations, and open houses have increased home-school connections; and virtual social-emotional learning practices that were implemented as a response to the pandemic have led to positive results. Additionally, while for some students, remote learning was not successful or desirable, research is beginning to show that some students thrived via remote learning and preferred it over traditional school (Digital Promise, 2021).

As institutions consider how virtual learning will become integrated with schools’ instructional programs, we anticipate that districts will want to build and maintain robust principal pipelines that can produce and support educational leaders who thrive in a virtual context. Gates et al. (2019, p. xiv) define a principal pipeline as the “range of talent management activities that fall within a school district’s scope of responsibility when it comes to school leaders.” Their research, examining an initiative funded by The Wallace Foundation, led to the idea that “comprehensive, aligned” principal pipelines are a mechanism for supporting high-quality school leadership—“comprehensive” because they consist of parts, or domains, that capture the talent development actions needed to shape and support a principal, and “aligned” because these domains reinforce one another.

School leaders should not assume a dominant “learning loss” narrative about the pandemic is true for all of their families, but should be open to the new opportunities families may want to continue to develop.

Digital Promise explored what principal pipelines might include to support leaders working in virtual environments. The resulting report provides research-based considerations for how to build comprehensive, aligned, equity-centered principal pipelines that prepare and support leaders to work in virtual contexts. Because this research is emerging, this report is an early effort at guidance.

This report was commissioned by The Wallace Foundation, which supports efforts to promote effective school leadership. It is organized in five chapters. In Chapter 1, we discuss the methodology for our study. In Chapter 2, we provide background for considering virtual learning as what we call “powerful learning.” In Chapter 3, we discuss three key questions for districts considering what may be involved with developing principals who can lead in a virtual environment:

1. What does a principal need to know and be able to do to effectively lead in a virtual context?
2. What on-the-job supports do these principals need?
3. What conditions promote the development of a large cohort of principals who are effective leaders in a virtual context?

In Chapter 4, we augment the research underlying principal pipelines (Anderson & Turnbull, 2019; Aladjem et al., 2021) by addressing each of the seven domains in a principal pipeline. These domains are as follows:

1. Leader standards
2. High-quality pre-service principal preparation
3. Selective hiring and placement of principals
4. On-the-job evaluation and support
5. Principal supervisors
6. Leader tracking systems
7. Systems and sustainability

In our discussion of each domain, we offer strategies for districts to consider and questions for reflection.

Finally, in Chapter 5, we offer ideas for potential future research.

Chapter 1: Methodology

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Digital Promise developed the recommendations in this report by conducting two research activities. First, we reviewed existing research on the intersections of school leadership, virtual learning, equity, and the seven domains detailed in the principal pipeline. Second, we conducted interviews with leaders from five school districts.

Our review of this research began with relevant publications from the RAND Corporation and Policy Studies Associates, namely “Laying the Foundation for Successful School Leadership,” by Burkhauser et al., and the “Building a Stronger Principalship” series by Turnbull et al. These publications were chosen for our first pass because of their positioning at the intersection of principal leadership and equity. By reviewing the works cited in these documents, as well as subsequent publications that cited them, we began our search in databases such as EBSCO, ERIC and JSTOR. Key terms included the names of each of the seven domains, “equity,” “equitable,” “remote learning,” “virtual learning,” “principal,” “leadership,” and other terms specific to each domain. We prioritized recent scholarship (publications published within the past five years) as well as peer-reviewed scholarship. As the research team found relevant publications, they were catalogued and tagged with the publication’s relevance to any of the seven domains.

Through this process, the three key questions described in Chapter Three began to emerge. At this point, our search broadened to include white papers, technical reports, and other emerging sources that while non-academic, were timely, relevant, and trusted. This phase of the literature review continued through drafting and helped inform the interview process that took place in Spring 2021 by identifying gaps in the evidence base and areas for further research.

To begin to addressing these gaps, we selected and interviewed eight principals and three district administrators from five districts total. We recruited all participants from districts that had been recognized by Digital Promise for sustaining powerful teaching and learning during the shift to virtual learning, drawing from our League of Innovative Schools (a national network of forward-thinking leaders in education aiming to design, validate, champion, and scale effective, innovative learning opportunities to advance equity and excellence for every student), and our Education Leadership Institute networks (a cohort of district and school leaders who worked together as thought partners on planning and implementation, problem-solving strategies, and practical resources to meet the urgent education and equity challenges impacting their school communities during the COVID-19 pandemic). In selecting these 11 individuals, we considered diversity in our sample in terms of participant race/ethnicity (30 percent of interviewees are BIPOC), participant years of experience, district size, urban-rural classification, student demographics, and geographic region. Where possible, we interviewed up

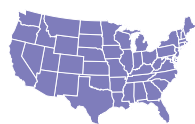


8 Principals



3 District Administrators

from



5 Districts Total

to three leaders within the same school district to capture multiple perspectives of participant experiences within the same system (see Appendix A).

Interviews were conducted between February and March 2021. We used a semi-structured interview protocol for principals with 11 questions organized in five sections: (1) instructional technology use, (2) role of the principal in a virtual context, (3) necessary training and skills for leading in a virtual context, (4) on-the-job support, and (5) evaluation in a virtual context. We used a modified version of this protocol with district leaders, which also included a section on systems for sustaining change (see Appendix B).

We analyzed interview transcripts using NVivo, a cross-platform software package for analyzing qualitative data that allows researchers to code text, record memos, and analyze emergent themes. We began with 18 preliminary deductive codes following the categories of the pipeline domains and themes from the literature review, then met to adapt, extend, and add codes based on themes that emerged in the data. Our final coding scheme included 48 codes. Multiple coding passes were conducted to filter and focus features of the data relevant to the research questions, and researchers met during the process to compare their application of the coding scheme.

We acknowledge that there are limitations to our research and recommendations. In our review of the literature, we found that while there is ample research in some areas, such as school leadership and equity of access, there is little research on principals leading in a virtual environment. Further, while we seldom, if ever, found scholarship with overlap across the topics of leadership, equity, and virtual learning environments, we were able to find scholarship with at least some overlap in two areas. For instance, many publications addressed responsible, equitable school leadership but did not do so in a virtual learning context. Other studies showed how school leaders can enable meaningful use of technology but did not discuss equity considerations.

In this report, we are bringing together what is known and applying it to a new area not explicitly in the research—high-quality, equitable virtual learning and comprehensive, aligned pipelines. Therefore, we consider this report an early effort at insights, based on Digital Promise’s practical experiences in the field, interviews with a modest number of technology-adept principals and administrators, and an emerging, but small, research base.

Chapter 2: Powerful Learning in a Virtual Setting

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Digital Promise believes that virtual learning can be most effective when it is focused on—and results in—powerful learning. We have defined “powerful learning” as those experiences that engage learners’ hearts and minds, characterized by being personal and accessible, collaborative and connected, authentic and challenging, and inquisitive and reflective. Powerful learning provides opportunities for students to deeply engage in learning activities while using technology to meaningfully advance the depth and breadth of their understanding of important curricular standards and skills (Digital Promise, n.d.).

For the benefits of powerful learning to be realized, Digital Promise believes, based on ten years of experience and research with schools and school districts, that school leadership must take an active role in its definition, promotion, and maintenance. Thus, in the virtual context, we view powerful learning as the product of school leadership, inclusive access, and meaningful use. We represent this relationship in the following equation:

$$\text{POWERFUL LEARNING} = \left(\text{SCHOOL LEADERSHIP} \right) \times \left(\text{INCLUSIVE ACCESS} \right) \times \left(\text{MEANINGFUL USE} \right)$$

In this equation, the multiplication symbol is used deliberately to make clear that if any of the three factors is a zero, the chance for powerful learning with technology is also likely to be zero. Beginning with the last factor and working backwards, the following sections elaborate what we mean by meaningful use, inclusive access, and school leadership—the three factors necessary to ensure equitable outcomes.

Meaningful use

To bring powerful learning to life, meaningful use of technology should make sense in the eyes of the students. Students should experience technology as helping them to achieve learning goals they care about, not just as a way to get extra practice, prepare for a test, or comply with school requirements. Teachers find use of technology meaningful when it advances their interactions with students, strengthens their lesson plans, and provides insights that help them adapt to their students’ needs. Meaningful use should address the full range of curricular goals and standards—not just learning facts and procedures, but also building students’ conceptual understanding and long-term skills like writing, communicating, and designing.

With regard to meaningful use, researchers consistently find that education only improves when changes occur to integrate technology across the entire instructional triangle—a triangle of connections among teachers, students, and instructional resources (Cohen et al., 2003). Below we elaborate with examples of what it looks like when technology is integrated across the instructional triangle (and not just as a substitution for one narrow type of activity, such as doing practice problems).

When students work alone or in groups

One common opportunity for integrating technology is when students do work on their own or in small groups. Technology can provide virtual manipulatives (interactive visualizations or simulations) that students can use to explore a subject matter concept and develop their own initial questions and understandings (U.S. Department of Education, 2017). For example, students could explore with technology how the shape of a curve shifts when an equation is changed, instead of tediously plotting a graph point-by-point. They

may begin to develop their own understanding of what each variable in the equation does to the shape of the line—and teachers can later build on and strengthen their initial understandings. Alternatively, students may explore a topic through a “serious game”—a game specifically designed to provide opportunities to learn. With serious games, students can experience learning while immersed in a challenge-based, narrative experience, such as investigating why a respiratory disease is spreading in a historical game about Victorian England. Students can also receive feedback from a computer as they work on solving a problem on their own or in groups, which can augment feedback they receive from a teacher by being more timely, more specific, or presented in a manner that supports a growth mindset.

Technology can also make virtual learning more relevant and powerful for students by attending to learner variability, or the way in which factors such as literacy and numeracy, cognition, student background, and social-emotional learning impact the way a student learns. Technology providers often market this capability as “personalization”—although we would urge school leaders not to accept personalization at face value, but to ask more specific questions about how technology-based differentiation is meeting specific student needs. For example, technology can help English language learners make connections between what they are learning in different settings through the creation of digital texts (Garcia-Pastor, 2019). Likewise, optimizing access to tools and assistive technologies—like screen readers and customizable text preferences (CAST, 2018; National Center on Accessible Educational Materials, 2016)—is essential in virtual learning environments so that all learners can fully participate in powerful learning experiences. Personalization also means enabling students to express ideas about culture and community. For example, photo and video capabilities of cameras can help students show teachers what a particular curricular idea (such as energy conservation) looks like in their community.

Supporting teachers’ work with students

Strong lesson planning for classroom use of technology is commonly described as “blended learning” (Graham, 2006). Blended learning implies technology use that gives teachers opportunities to teach better—which contrasts with two separate tracks for learning, one via the teacher and the other via technology. Teachers may be able to begin a curricular unit with a video, map, or other media asset that sets the stage for learning to come. They may be able to better pose a challenging question for students to learn about by using a technology-based demonstration. For example, a science teacher might use a simulation of two skateboarders who push each other to introduce Newton’s third law (each action has an equal and opposite reaction). They might use technology’s ability to access and visualize real-world data to motivate a history or geography lesson about changing urban populations.

As previously mentioned, technology may also enable teachers to differentiate work for students. It may also let teachers “flip” or re-organize their lessons so that the information-transmission components are delivered by computer, allowing teachers to allot what may be limited synchronous time to the higher value activities of constructing and repairing shared meaning or attending to students’ social and emotional needs.

Technology may free teachers up so they can spend more time working with the students who most need their support. For example, high-achieving students may be able to continue their own learning with a serious game while the teacher gives other students individualized attention. This is especially important for historically underserved students who have for decades received lower-quality learning experiences than their more privileged peers.

Giving teachers useful information

Useful information is timely, informative, and actionable. Data dashboards can give teachers information about how their students are progressing, and provide suggested actions to teachers to adapt and improve instruction. For example, teachers may be able to learn which three homework problems were most difficult for students and what their wrong answers were—thereby spending synchronous class time on what matters, rather than devoting equal time to all homework questions (Murphy et al., 2020). Technology can also organize curriculum materials to be more informative to teachers. For example, based on student activity, a recommendation algorithm might suggest that a teacher probe whether students have a particular misconception and might suggest a suitable instructional task. While the technologies referenced above hold great promise, and can be especially valuable in a virtual setting where teachers have less ability to directly observe and respond to their students' needs, they also come with risk. A growing body of research shows that machine learning algorithms can exacerbate pre-existing inequalities in schools, such as racial discrimination, if algorithms are programmed with biased datasets (Roschelle et al., 2020). Thus, it is important that teachers take care that the data and recommendations they receive via technology are appropriate for their students and their equity goals.

Inclusive access

Unfortunately, virtual learning often exacerbates the inequitable access to technology experienced by millions of students (previously termed a “homework gap” because not all students were able to do homework as not all homes had similar bandwidth and devices). These inequities disproportionately impact students of color and students experiencing poverty (Cator, 2019; Kuhfeld et al., 2020). Therefore, leaders must ensure all students have access to the technology necessary to participate in authentic and engaging learning opportunities, and that all teachers are skilled in creating and delivering those experiences (ISTE, 2018).

Closing the digital access gap

Inclusive access starts with hardware and connectivity. While the focus of inclusive access has never been limited solely to brick-and-mortar school buildings, the prevalence of remote learning has amplified the importance of ensuring that historically marginalized students— including black, indigenous, and people of color (BIPOC students) and students experiencing poverty—have access to a learning device and reliable, high-speed internet at home. Among the questions that school leaders might ask are the following: Are all students able to do their homework and remote learning activities on their own device or are they sharing a device with siblings or others? Is that device a smartphone, computer, or tablet—and does a small screen or limited capabilities for interaction limit how some students can interact with learning materials? Are they able to keep their device's battery charged or plugged in? Is their internet connection fast and consistent? Do all students have access to technical support when something doesn't work? Answers to any of these questions can inform the actions leaders can take, either independently or in partnership with local organizations, to remedy issues of access for their students and thereby equip them for virtual learning.

Disrupting systemic bias in virtual learning

Students in low-income or minoritized settings are more likely to get low-quality learning experiences, such as when using technology for review, drill-and-practice, or test preparation. We have evidence of systemic biases in online learning experiences, and these biases have been documented for decades (Warschaur &

Matuchniak, 2010; Darling-Hammond et al., 2014). Students in affluent or privileged settings are more likely to use technology for enriching learning experiences in alignment with the above concept of meaningful use. For example, merely watching instructional videos rarely produces powerful learning. Game-ified drill-and-practice exercises rarely produce powerful learning. Participating in discussion forums may not produce powerful learning, especially for English language learners.

It is important that educators recognize that by not offering all learners the powerful learning opportunities that students in higher-income settings experience, they perpetuate systemic biases and build ennui in student populations dissatisfied with how technology has been used in their learning. It is the responsibility of each school leader to understand these dynamics and assess how current practices may be hindering virtual learning in their setting, as well as which students are using these least meaningful uses of technology.

In addition to instructional implications, eliminating systemic bias has implications for hiring, which can positively or negatively impact a school's adoption of virtual learning. Districts can follow recent scholarship which has reaffirmed that a commitment to equity involves a concerted effort to recruit and retain people of color for vacancies in school leadership positions (Bartanen & Grissom, 2019; Castro et al., 2018; Grissom et al., 2021). A synthesis of research has shown that principals of color are especially likely to have positive impacts on both students of color and teachers of color (Grissom et al., 2021). Given research indicating that school leaders who serve as visible community leaders and advocates build trust between the school and wider community, it may be important for districts to identify candidates with strong relationships in the communities they serve (Grissom et al., 2021). This is especially important during adoption of virtual learning, where trust is necessary for students, parents, and staff to follow principals into the sometimes unfamiliar territory of a virtual learning environment. To build this trust, principals can champion inclusive access to generate buy-in among their students and families and foster "meaningful connections" with community members, a process that can employ technology as an invaluable resource (Conley, 2020; Grissom et al., 2021).

School leadership

Technologies for powerful learning do not implement themselves; effective leadership is essential. Effective principals have skills and expertise needed to support instruction, manage and develop people, and manage the organization (Grissom, 2021). These skills drive behaviors that have substantively important effects on outcomes for students and teachers: engaging in instructionally focused interactions with teachers, building a productive climate, facilitating collaboration and professional learning communities, and managing personnel and resources strategically (Grissom, 2021). If effective school leadership is the leading factor in the equation for powerful learning, then the principal's responsibilities include facilitating inclusive access and meaningful use—responsibilities that converge with each of the four aforementioned behaviors.

Because we discuss school leadership throughout the remainder of this report, in this section we describe how principals can champion powerful learning by supporting teachers' use of technology and addressing barriers and obstacles that emerge.

Selecting the right tools

Leaders serve an important role in helping their schools determine which technologies are instructionally valuable. Today's educational technology market has an abundance of offerings, many of which have no proven value in improving learning. Indeed it is quite common for research on technology to find there is no difference in learner outcomes between schools that use or do not use a particular technology (Herold,

2016). Yet, there is also consistent evidence that some approaches to using technology are often effective, such as using technology for formative assessment or in support of collaborative learning (Bush & Hall, 2011; Peters, 2018; Peters et al., 2018). The effective uses may be specific to each curricular subject and even to the type of learning objective within the curricular subject. For example, technology can provide visualizations that enhance conceptual understanding (Peters, 2018). It can be challenging to identify quality products designed around evidence-based practices (Kelsey & Francisco, 2016; Morrison et al., 2014). Resources such as the What Works Clearinghouse [Practice Guides](#), the [Best Evidence Encyclopedia](#), and the UK's [Educational Endowment Foundation](#) can be helpful—and for the leader who takes some time to make connections to researchers, researchers are increasingly willing to translate research into terms that make sense to school decision-makers. In one example of translating research to become more useful, Digital Promise offers a free [Learner Variability Navigator](#) which can help educators identify research-based strategies that meet the full breadth of needs in their student population. We also advocate looking not at individual research studies, but at meta-analyses which summarize the results across a large number of studies and thus offer a broader picture. Meta-analyses are available regarding technology in mathematics learning, collaborative learning, and many other topics of interest. Connecting with a research colleague can also help a leader find a meta-analysis on the topic they care about.

In addition to considering the “average effect” of technology on learning, leaders should also consider the school’s context and populations served when determining which technologies to target and implement. What makes sense for a large urban district may not make sense in a small rural school. Accordingly, as leaders proceed into the relatively new world of technology for virtual learning, they should be careful with the concept of an “educational technology solution.” Leaders are advised to be wary of sales pitches for “charismatic machines” (Ames, 2019)—pitches implying the mere implementation of software, systems, laptops, or any other piece of equipment will lead to a desirable revolution in teaching and learning on its own. It is better to think of technology as an infrastructure, an enabler, or a resource—terms that rightfully imply the additional leadership, improvement, and policy efforts a school will need to layer on top of its consideration of technology to make a positive difference.

Developing improvement initiatives

For effective use to occur in a virtual environment, leaders need to develop improvement initiatives that ensure inclusive access and make purposeful use of the technologies identified. This can begin with setting clear improvement goals, metrics, and processes for monitoring progress towards goals and getting buy-in for using technology as part of an improvement process. Improvement initiatives are likely to be most successful when they align the use of technology with other curricular directives, such as standards, frameworks, curricula, pacing guides and assessments—because technology does not make time for itself and otherwise often gets pushed to the margins of learning experience. To this end, it is beneficial to develop ways to use the data created by technology as a tool for improvement.

Improvement initiatives should also include the teacher and staff professional learning that is needed for adults to understand how to make meaningful uses of technology happen, particularly for teachers in schools that serve a majority of students from low-income backgrounds and students of color. This learning not only encompasses the skills needed to appropriately use the technology, but also the skills necessary to support equitable distribution of powerful learning experiences. By illustrating how technology is the enabler for the changes teachers collectively want to achieve, leaders can create a sense of shared ownership for the technology among all teachers.

Chapter 3: Three Key Questions for Districts

Chapter 3: Three Key Questions for Districts

To think through what is involved with developing principals who have the skills and expertise to lead in a virtual context, districts might consider three questions:

- 1. What does a principal need to know and be able to do to effectively lead in a virtual context?**
- 2. What on-the-job supports do these principals need?**
- 3. What conditions promote the development of a large cohort of principals who are effective leaders in a virtual context?**

In this chapter, we explore these questions and provide some possible answers to them. These answers, based on our review of current literature and our interviews with principals and school leaders, are an early effort at providing insights into what may be necessary to develop effective, equity-minded principals who can also lead in a virtual context. In the following chapter, we show how those answers can inform the development of pipelines that create high-quality principals whose skills include the ability to lead in a virtual learning environment.

What does a principal need to know and be able to do to effectively lead in a virtual context?

The role of the principal in a virtual setting is not simply the same principal job in a new environment. In discussing leadership for distance education, Beaudoin (2002) noted that, “Leadership in distance education, as distinct from managerial functions in a variety of settings, is defined as a set of attitudes and behaviors that create conditions for innovative change” (para. 3). While nearly two decades old, this statement rings particularly true today, given the rapid shift to virtual learning in 2020 and the need to make progress on sound integration of virtual learning into core curriculum going forward. SAMR, an acronym for Substitution, Augmentation, Modification, and Redefinition, is a commonplace framework for looking at the depth of technology use (SAMR model, n.d.). In “substitution,” technology acts as a direct substitute and offers no functional change; in “redefinition” the technology allows for new, previously inconceivable tasks. In the rapid shift to virtual learning during the pandemic, much “substitution” occurred but opportunities for “redefinition” also emerged. A crisis is a terrible thing to waste, and the opportunity to deeply consider how virtual teaching and learning can set the stage for innovation that re-shapes education broadly should not be missed.

Principals need specific skills and expertise to lead in a virtual environment

New technologies appear, change, and evolve rapidly. Unlike a decades-long textbook adoption cycle, technologies are changing in small ways overnight and in bigger ways as the months and years go by. Thus, leadership in a virtual context is subject to frequent and sometimes substantial changes. Principals need to develop corresponding agility and adaptability. Indeed, each of the eleven leaders we interviewed emphasized that nimbleness and flexibility are non-negotiable traits for both principals and principal supervisors making decisions around virtual learning. One district administrator who is also an adjunct instructor at a local university said, “In my first class [of 2020-2021], I spent a nice little chunk of time just talking about how leading is fluid and contextual, and you need to understand that just because you’re accustomed to

doing things in a certain way in the leadership space, that when the environment changes, you have to change with it.”

The most recent Speak Up research provides guidance on the competencies principals need for leading in a virtual environment. Speak Up is a free research tool used by more than 30,000 districts to learn stakeholders’ views on the role of technology in learning. Speak Up is also a national research project—it is the largest collection of authentic stakeholder input in education and reports are used to inform policymakers at all levels (Project Tomorrow, 2021). As they emerge from school closures, principals are using technology for

The 2021 study found that principals’ roles now include “morale cheerleader for their staff, public relations manager for health and safety to the parent community, logistics and scheduling manager for new school formats, and the digital learning director at their school pushing the envelope in terms of the use of online resources and new learning modalities” (2021, p.1)

communications, data-driven decision-making, and for finding new solutions to new challenges. When the principals we interviewed were asked to reflect on how their roles had changed following the transition to virtual learning, they emphasized the role of the principal in fostering school culture. One principal reflected on the challenge, asking, “How do you keep teachers and students feeling connected to the school? How do you build community when everyone’s not all here at the same time, ever?”

Principals in both the Speak Up study and our interviews described their significant new responsibilities for helping their teachers develop as digital educators. For example, in the study and in our interviews, principals reported personally evaluating the digital content being used in instruction. Many are examining how technology enables differentiation, such as the ability to adjust texts to multiple reading levels and languages and to tailor instruction based on timely student performance data. One principal described examples of new considerations required for this virtual instructional leadership. “If we do book clubs at the middle school level and really prioritize student voice, student choice, a structure of engaging in a conversation around the text in a small group, how do we do that in a virtual setting without ongoing mediation by the teacher potentially to still encourage all of those same goals that would come out of a book club, in terms of skills and content exploration and routines and all of that? Then what technology could we use?” Note, in particular, how this principal is looking at technology to enable an overall pedagogical vision; not as an isolated, piecemeal add-on.

When considering what leadership competencies for leadership in a virtual context look like, districts can consult the International Society for Technology in Education’s Standards for Education Leaders (ISTE, 2018) and the Continuous Learning Rubric (CoSN, 2020; Classlink et al. 2020). The Consortium for School Networking (CoSN), a professional association for school system technology leaders; Classlink, a leader in single sign-on for education technology products; and the State Educational Technology Directors Association (SETDA), the principal membership association representing digital learning leaders in the U.S., designed the Continuous Learning Rubric specifically to address leadership in virtual learning environments. Key considerations include:

- **Data privacy and security:** With increased use of digital content and tools comes increased data privacy and security risks. Principals should know the key practices related to privacy and security and be prepared to:

- “ensur[e] that students and staff observe effective privacy and data management policies,” (ISTE, 2018)
- “adhere to all student privacy laws, including FERPA, through cybersecurity and other measures [and] shar[ing] resources with families about best practices when using technology in the household,” (Classlink et al. 2020) and
- be aware of and make plans to address new risks, like cyberbullying or inappropriate use of social media.
- **Selecting resources:** Virtual learning environments require the selection of digital learning resources and/or physical resources that can be provided to students at home and pedagogical approaches that deeply engage students through the meaningful use of technology (Means et al., 2014). To move toward powerful learning, principals should be able to do tasks including:
 - “outlin[ing] the instructional delivery methods to include virtual learning, with plans that provide concrete expectations for students and staff and the ability to seamlessly transition between in-person and virtual learning,” (Classlink et al. 2020) and
 - “support[ing] educators in using technology to advance learning that meets the diverse learning, cultural, and social-emotional needs of individual students” (ISTE, 2018).
- **Community engagement:** Involving stakeholders in vision setting, planning, and implementation of virtual learning will help mitigate resistance that can emerge from students, teachers, parents, school board members, and other stakeholders (Office of Educational Technology, 2021). Principals can foster community engagement when they:
 - “engage education stakeholders in developing and adopting a shared vision for using technology to improve student success, informed by the learning sciences,” (ISTE, 2018)
 - “communicate effectively with stakeholders to gather input on the plan, celebrate successes and engage in a continuous improvement cycle,” (ISTE, 2018) and
 - “include a regular cadence of meetings and interaction with parents and the community and implement measures that respond to their feedback” (Classlink, et al. 2020).
- **Systems thinking:** Because leadership in a virtual environment requires agility and adaptation that matches the speed of technology, principals should build “teams and systems to implement, sustain, and continually improve the use of technology to support learning” (ISTE, 2018). Achieving continuous improvement requires establishing a structure for checking progress towards goals, deciding on new plans of action, and supporting teachers to implement changes. This requires school leaders to think structurally about the system of infrastructure, resources, staff, and partnerships that they need to put in place so continuous improvement can occur.

Effective principals apply an equity lens to all their efforts, including virtual learning

School leaders who are adept at virtual learning recognize that just because a technology platform offers “choice” or “personalization” does not mean it is well-suited to meet the needs of all the populations that the school serves. Such claims require careful consideration, preferably with students, parents, and teachers in the focal population. Unfortunately, more affluent parents are often more vocal, which can lead to a tendency to ensure that the needs identified by affluent parents are addressed while the needs of other parents are unattended to. For equity to be achieved, this tendency must be actively countered.

“You have to be able to build and manage these relationships with your staff remotely, and that’s really hard to do. It’s hard to get to know someone, and build trust, and build rapport, and build a relationship entirely over a screen. It’s emotional intelligence, but also combined with time management, organizational skills, having the skills to put efficient systems in place within your virtual school ... for how progress is monitored and shared. There’s all sorts of new levels of systems thinking that are needed in this virtual world.”

– Principal



Principals and supervisors in four of the five districts represented in our interviews shared that one unexpected outcome of the shift to virtual learning had been an uptick in communication and connection between the district and community.

like, okay, we’re back now, we’re going back to old ways. We can now have meetings and invite families in this manner that is comfortable for them and attainable for them.”

Other equity considerations for principals include transparent communication with all stakeholders that models and cultivates the use of technology for positive social change (ISTE, 2018). This includes sharing data and information with their school community that shows progress toward an equitable environment and the equitable education of all students (Castro et al., 2018; Khalifa et al., 2016, Wayman et al., 2008), and culturally responsive, anti-racist teaching (Khalifa et al., 2016; Turnbull et al., 2016).

Indeed, a virtual environment may provide advantages for engaging historically underrepresented stakeholders in district decision-making. Principals and supervisors in four of the five districts represented in our interviews shared that one unexpected outcome of the shift to virtual learning had been an uptick in communication and connection between the district and community. When districts began proactively reaching out to invite families and community members to join meetings over video conference calls rather than attending in person, they removed barriers to involvement. As one principal described, “That level of family involvement is off the charts. We hope that it’s not going to be an all or nothing,

What on-the-job supports do these principals need?

Because the role of the principal in a virtual setting is not the same job in a new environment, the on-the-job support they need is not the same. The shift to virtual learning has raised the stakes for principals as they manage their daily tasks, personnel, and the school's instructional program. As Bloom and Tudor (2020) state, "In a remote learning environment, even veteran principals are dealing with new resource management responsibilities, professional development needs of teachers, and instructional supports for all stakeholders" (Tip 2 section, para. 6).

Consequently, on-the-job supports need to be reimagined for the virtual environment. One principal we interviewed said, "Just like we're in a brand new paradigm of virtual instruction, I think the professional learning for leaders has been non-existent as well because this is all brand new." Traditional approaches may not be the most effective way to provide support, or they may need to be adapted for an online environment. To ensure that powerful, equitable learning is maintained in the virtual environment, we argue that the focus of support should be support for innovation and taking risks, and that support can capitalize on the power of collaboration.

Principals need support for innovation and risk-taking

Leadership in a virtual context involves creating conditions for innovative change. Because the virtual context evolves rapidly, leaders are continually evaluating which technologies are instructionally valuable. This may mean implementing a new tool or discontinuing the use of a tool that's not proving valuable. With changes in technology, principals often learn alongside their teachers, and teachers learn alongside their students—something that can feel very risky. Thus, it is important that on-the-job supports for principals promote a culture of continuous learning built on trusting relationships and open communication (Fang, 2007; Pautz, 2016; Bakhshaei et al., 2019). Such a culture begins with leaders modeling vulnerability and inquiry (Bakhshaei et al., 2019). As one principal supervisor shared, "[One role of the principal supervisor is] helping principals to know that it's okay to be human. That it's really okay for you to be vulnerable with your teachers to say that, 'Here's some things I don't know. Here's some things I think we'll get better at together.'"

To protect innovation and risk taking, supervisors can also serve as a buffer against outside interference and competing initiatives that may present untenable demands on the principal's time. To effectively serve as a buffer in a virtual environment, principal supervisors should stay in regular contact with their principals so they can be made aware of the demands on principals' time as they emerge. Frequent check-ins will also afford supervisors and principals the opportunity to level-set on shared priorities. This may be especially necessary because virtual contexts are dynamic, often resulting in frequently-changing school and district priorities. These check-ins shouldn't be limited to one-on-one meetings, but can extend to virtual walk-throughs and observations. When asked what their principal supervisors could do differently to better support them, principals representing three of the five districts in our interviews recommended that supervisors spend more time visiting virtual classrooms to gain a better contextual understanding of the challenges that principals face. One principal said, "[Principal supervisors] don't get what it's like on a day-to-day basis in the school. I think maybe come spend a day or a week walking in our shoes and seeing what it's really like again because they were principals, but not in a virtual environment. They've never done what we've been doing." Additionally, the principal from a fourth district described how they did have this type of support from their

supervisor and they appreciated it: “[My supervisor] is phenomenal. He goes above and beyond what I’ve experienced in other districts with a superintendent. He’s a lot more present. He’s in buildings often. He calls and texts regularly.”

Districts may better prepare their school principals for success in the virtual environment by providing them with a mentor or coach who is not also responsible for their evaluation. Research on effective technology coaching has shown that non-evaluative coaching relationships are more likely to create a culture of risk-taking and ultimately improve technology use. Educators in the study who were coached in a non-evaluative relationship were not afraid of failing or being penalized as they experimented with new techniques (Bakhshaei et al., 2019). Within the community, supervisors can pair veteran principals with principals early in their career for mentorship. As one principal supervisor said, “Having a peer who’s a principal that’s also your mentor, I think that can help you in terms of, ‘I’ve been there, I’ve done that. This is what I did.’”

While separating one-on-one support from evaluation can be effective, we recognize that many districts may not have the resources to do so. When asked about receiving coaching from the same supervisor who conducted their evaluation, interviewed principals shared that a positive, trusting relationship was a prerequisite and suggested that supervisors set clear expectations around the purpose of meetings and interactions.

Collaboration is a valued form of support

Collaboration is central to principals’ role as technology leaders. Effective technology leaders use collaboration as a change management strategy, connecting themselves and their teachers with other schools both inside and outside of their district with the goal of sharing expertise (Fullan, 2014). In a study of principals’ technology leadership, participants saw collaboration as vital in how they were able to promote change and respond to successes and challenges (Pautz, 2016).

On-the-job supports, such as professional learning communities and communities of practice, can create a space for principals to develop shared solutions for inclusive access and meaningful technology use. The peer support provided by professional networks can also combat the isolation that principals may feel in virtual environments and can address motivational problems in technology adoption (Fang, 2007). Conley (2020) points out that such communities not only create connection, but offer access to other expertise besides that residing in the supervisor. This can be especially helpful in orienting novice principals or principals with limited technology literacy for the virtual context. Online communities for principals can also serve as models for the online communities they should create for teachers.

When asked what types of professional learning supports were most helpful during the past year of virtual learning, interviewed principals overwhelmingly brought up their experiences in principal PLCs. For example, a principal in a large district discussed how beneficial it was to be placed in a cohort of 15 district principals who met twice a month to share strategies and troubleshoot challenges, while principals in smaller districts discussed participating in PLCs with other principals throughout the country. One principal said, “[It’s] always helpful to connect with administrators from different levels of experience in different school districts, potentially with vastly different roles to talk about how we work through certain dynamics.”

This strategy not only benefits novice principals, but also provides leadership opportunities for experienced

principals. One veteran principal noted that since there are often more principals who aspire to move up in the district compared to open senior leadership positions, access to these types of avenues for service to the district can make veteran principals feel valued and relevant.

What conditions promote the development of a large cohort of principals who are effective leaders in a virtual context?

While almost all schools implemented virtual learning during the COVID-19 pandemic, few entered into it with an existing vision for a large-scale shift to online learning. The term “emergency remote teaching” became pervasive in the dialogue about education to distinguish between planned online learning and what schools were faced with implementing (Hodges et al., 2020; Milman, 2020). While emergency remote teaching was fraught with uncertainty, many leaders now agree that the lessons learned through the experience, including the new role of the principal, will have long lasting, positive impacts on education (Project Tomorrow, 2021). Below we highlight some broad factors that districts can incorporate into their culture, capacity, and commonplace operations that support principals’ development as leaders in a virtual environment.

District leaders are visible in the virtual environment

One challenge of leadership in a virtual environment is that it can be isolating. Because there are fewer incidental connections, such as those organic conversations in the hallways and meeting rooms, interactions may take on different significance (Conley, 2020). Moreover, visibility of district leaders is critical to a positive school culture. Leaders can be intentional in demonstrating their commitment and support through virtual classroom visits. As one principal interviewed said, “It’s not any blame on them, but neither [my assistant superintendent nor my superintendent] has gotten into any of our virtual classrooms this year. Versus when you’re in-person, of course, district leadership is always circulating from school-to-school and popping into classrooms and seeing how things are going. That’s needed in our [virtual] schools too... My teachers have expressed that to me, ‘Hey, it doesn’t feel like anyone sees us.’ They said, ‘We know you see us, but we want to be seen for how hard this is and how hard we’re working and the good work that we’re doing too.’ I think just spending time helping teachers feel actually seen on Zoom would, in turn, help support principals too.”

Districtwide, leaders in a virtual environment should reflect on the social supports that come informally in face-to-face meetings, buttressing a culture of continuous improvement, and consider how those supports could also become a part of the virtual interactions. With more virtual and less personal contact, interactions run the risk of becoming purely transactional, and opportunities to celebrate successes may be missed. Conley (2020) offers some suggestions for creating an effective virtual social environment. For instance, principal supervisors should take care to be as present and attentive in virtual meetings as they would in an in-person meeting. In response to a question about engaging principals virtually, one supervisor said, “It’s different to having a two-hour meeting staring at a screen versus being in a room where there’s a connection. Maybe you’re out walking around or taking more breaks than you probably would normally, having some norms around what that looks like in a meeting. Whether it be cameras on, [it’s important] to really have that sense of community.” A principal in the same district shared that the intentional creation of norms for virtual interactions resulted in more inclusive meetings in which each principals’ voice was heard to a greater extent than had been the case when meetings occurred in person. In turn, these norms trickled

down to the campus level, and yielded increased teacher engagement in staff meetings, where teachers were “actually more likely to share. People who haven’t spoken up in the past, I think they get a little braver.”

Professional development curricula is rigorous and responsive to the needs of virtual leadership

To build capacity for effective virtual leadership, both pre-service and in-service principals need access to professional learning that develops the skills they need to lead. The specific skills addressed in a district’s professional development curricula can be drawn from the standards articulated as they defined the role of the principal. At the most basic level, principals need a competency-based framework that specifies what successful virtual teaching and learning looks like (see, for example, the earlier section on powerful learning).

More specifically, professional learning might include developing capacity in modeling technology use for staff (Hero, 2020), ensuring data privacy and security, and leveraging digital tools for meaningful instructional design and communication (ISTE, 2018). Research shows that principals need a greater depth of knowledge in technology. According to the SpeakUp survey, more than half of principals report that their skills are only “average” or “beginner” (Project Tomorrow, 2021). As one principal we interviewed said, “It’s really different than successful teaching in a brick-and-mortar classroom. When you are going in to watch a teacher teach [in person], a lot of what you look at is the kids. When you can’t see the kids in the same context, it’s very difficult to know what you’re looking at.”

“The pandemic revealed that the future terrain of education is not a predictable path that we can see off into infinity, to the horizon. It’s going to take some twists and turns, and this is just the start of what that’s going to be. Principals of the future have to be ready to manage change and be more agile ... with how they respond to their staff and their students.”

– Principal

In addition to technology-specific professional learning, understanding change management is important. When asked about the most important competencies future principals needed to be successful in a virtual context, interviewed principals and supervisors overwhelmingly emphasized the ability to pivot when circumstances change. As one principal said,

Districts should also consider how they can leverage technology to provide these skills. In our interviews, principals discussed the importance of district-based professional learning for building core competencies in

the specific tools used by the district. One principal we interviewed stated that professional learning should make aspiring principals “efficient in, not just aware of ... local platforms for instructional learning.” This might include principals or candidates practicing using video to observe teachers’ instruction, then using video annotation technology to add feedback for the teacher in preparation for a post conference (Lewis & Jones, 2019).

"We work very closely with [a local university]. We have a pre-service program with them that we started in 2010-ish, '09. It was started with the Race to the Top grant, and then we were able to revise it in a very deep way when we participated in the university principal preparation initiative with Wallace a few years ago. As by design, we have a lot of district staff who adjunct at [the local university] for these courses, and I'm one of them. It just so happens that last year this time I was preparing to teach my social justice class when we went virtual.

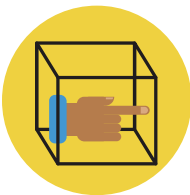
Everything since a year ago has been in a virtual space. We use Zoom, and we have really tried to leverage these opportunities to not only become better instructors ourselves but also to show our students, who are soon to be assistant principals and principals, how they can hold faculty meetings virtually. We show our students best practices in ways of holding virtual meetings, doing trainings, doing whatever you need to do. We have worked very closely with the university to hone what those skills are, and then we make it fit what we're doing in [my district] in terms of what leading looks like right now."

– District lead

Hiring practices offer authentic opportunities to demonstrate skills in virtual leadership

As virtual learning continues to climb districts' priority lists, hiring systems may need to be revised to reflect the changing needs. Districts can consider how their hiring practices reflect the standards for technology leadership, as well as how they include authentic opportunities for candidates to demonstrate and discuss competencies that are particularly relevant for leading in a virtual environment.

The hiring process can be an opportunity for candidates to discuss how they would bring in these competencies to solve timely issues regarding equity in virtual learning. One supervisor we interviewed reported having to develop new leadership questions for hiring principals, including,



"How are you leading in this space?"



"What has been your impact?"



If "inclusive access" is a multiplier factor in the growth of virtual learning, it is important to ask about the connections among leadership, powerful learning, and equity. For example, one might ask: Have you thought about how virtual learning can more meaningfully connect to what engages our academically struggling students?



Beyond thinking about technology as a means to remediate deficits, have you considered how it might be used to pull in cultural assets and support students in expressing themselves?



How would you deal with some of the equity issues that have come to the forefront with virtual learning?

Interviews can also include real-world problem-solving tasks and scenario-based questions, which can help hiring committees understand how a candidate will respond to the unique challenges presented and exacerbated by the virtual context. For districts wishing to expand their community outreach efforts, principal interviews could involve sketching a plan for communicating with families about technology-specific initiatives. Districts that perceive a need for increased attention to social-emotional learning can ask candidates to describe the care practices that they would implement in classrooms to support the physical, mental, and emotional well-being of all students as they use technology for learning. Other inclusivity-oriented demonstrations can involve experiences with assistive technologies and the legal guardrails surrounding special education services (ClassLink et al., 2020; ISTE, 2018). A focus on specific plans, ideas, and experiences may also increase consideration for candidates who would be overlooked in a hiring process too narrowly focused on certifications, degrees, or other institutionalized resume-builders, which can exclude candidates who did not have access to these forms of recognition.

Chapter 4:

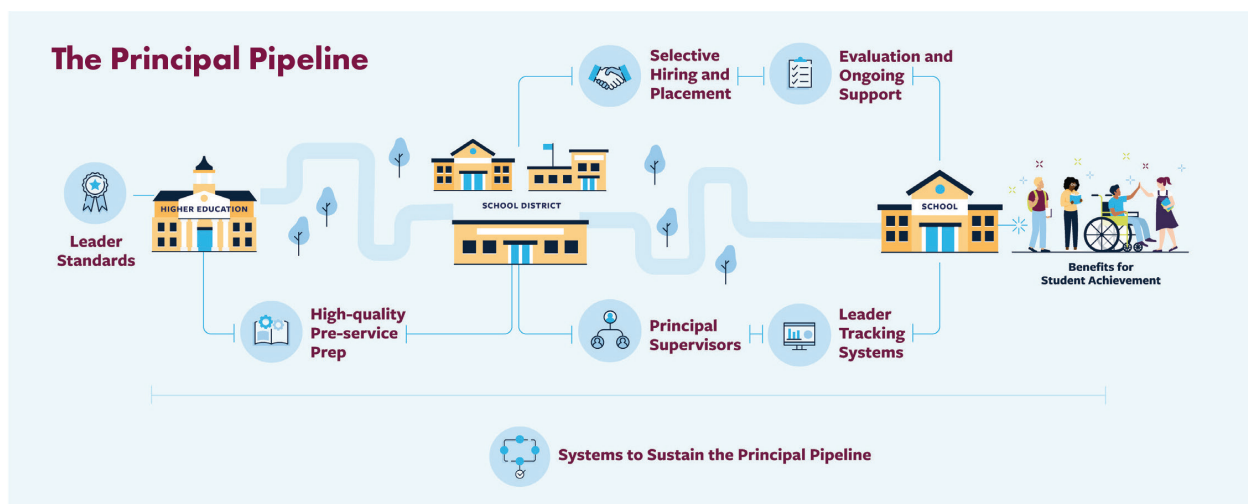
Building a Pipeline of Principals Who
Can Lead in a Virtual Environment

Chapter 4: Building a Pipeline of Principals Who Can Lead in a Virtual Environment

In the last chapter, we posed three questions to guide districts in thinking strategically about developing principals with the skills and expertise to lead in a virtual context. In this chapter, we describe actions that could help districts build pipelines filled with such principals.

In 2011, The Wallace Foundation began the Principal Pipeline Initiative (PPI) to develop and support effective school leaders. The objective of the PPI was to examine whether a comprehensive, aligned set of activities would be more effective than business-as-usual approaches to the preparation and management of school leaders. A 2019 study by the RAND Corporation found that the pipeline approach was feasible, affordable, and most importantly, effective. Pipeline district schools with newly placed principals significantly outperformed those of comparison schools in students' reading and math (Gates et al., 2019).

In this specific approach to principal development and support, the pipeline covers a range of preparation and development activities that fall within a school district's scope of responsibility for school leaders. The principal pipeline consists of seven key parts, or domains:



1. Leader standards
2. High-quality pre-service principal preparation
3. Selective hiring and placement of principals
4. On-the-job evaluation and support
5. Principal supervisors
6. Leader tracking systems
7. Systems and sustainability

These pipelines are “comprehensive” because these domains cover the span of talent development actions needed to shape and support a principal over the arc of a school leadership career. They are “aligned” because their domains interlock and reinforce one another. Leader standards, for example, shape principal training and how principals are evaluated.

In the wake of the pandemic, as has been noted throughout this report, it is clear that ability to align and integrate virtual learning into an overall program of instruction needs to be one of the characteristics of principals who emerge from comprehensive, aligned pipelines. It is also clear that the virtual context has implications for the skills principals need to manage and develop people and to manage the organization. These new needs will impact the ways in which principal pipelines are designed and implemented.

Below, we look at the seven domains and discuss how leadership in the virtual context could be embedded into each one. We offer strategies for districts to consider as well as questions for reflection. We base these considerations, in part, on our review of current literature on the intersections of school leadership, virtual learning, equity, and the seven domains of the principal pipeline. We also base these considerations on our interviews with principals and district leaders that were a part of this study, as well as our ongoing interactions with school and district leaders in the Digital Promise network (e.g. the League of Innovative Schools). Because there has been little, if any, definitive research on the nexus between high-quality, equitable virtual learning and comprehensive, aligned pipelines, we are in some cases projecting considerations based on what is known but not yet empirically tested.

Domain 1: Leader standards

When a district establishes a principal pipeline, it begins by defining standards. Standards are a shared language through which stakeholders can discuss school leadership in terms of competencies that can be demonstrated and improved. Leader standards are used in defining the content for principal preparation, placement and management, pre-service curricula, candidate assessment criteria, and evaluation frameworks for in-service principals (Aladjem, et al., 2021). There are two key aspects of standards development to consider: content and process. The content of the standards should reflect the goals of developing principals who understand how to integrate high-quality virtual learning into instruction; who know how the virtual context impacts human development and relationship building, as well as personnel and resource management; and who can adapt to the rapid changes in the digital context. The process used to define standards should use technology to be more inclusive.

In interviews, a number of district administrators and principals recommended that when revisiting or updating existing leader standards, districts should begin by considering their goals for virtual learning. This is because technology is so prominent in today’s teaching and learning experiences and because the changes technology brings go beyond substitution for paper-based materials. Keeping the overarching objectives for student learning via technology front and center reflects what it means for a principal to be an instructional leader today.

In particular, districts should avoid approaching technology-specific considerations as something that can be “bolted on” to their principal standards after definition has occurred.

When adopting leader standards, research suggests districts use a collaborative development process,

incorporating mandates imposed by the state and seeking input from different roles that relate to leadership, such as principal supervisors, chief academic officers, pre-service preparation experts, and representatives of teachers' and administrators' unions, as well as principals and assistant principals themselves. These stakeholders need to revisit the standards on a regular basis and should continue to clarify the competencies based on experiences across all pipeline domains (Turnbull et al., 2016).

And they are not the only stakeholders whom districts should consider. Especially when considering families that may be hesitant or apprehensive about the virtual learning environment, it is imperative that community members also have a seat at the table. When appropriate communities are not involved, the very act of creating standards becomes an inherently biased process (Cambron-McCabe & McCarthy, 2005) and will leave the concerns of hesitant families unaddressed. For these reasons, it is important to include the voices and perspectives of the community that is served by the school and district, not only in the vision setting, planning, and implementation of virtual learning, but also in the creation and definition of leadership standards themselves. When the standards development team is comprised of a union of context experts, "people with lived experience of the situation ... who experientially know about the issue," (Attygalle, 2017, p. 3) including historically marginalized groups, as well as virtual learning experts with the cultural competence needed to effectively communicate with these groups (Angevine et al., 2019; Cambron-McCabe & McCarthy, 2005), districts can ensure that the biases that create the digital divide are not perpetuated in leadership standards.

Indeed, a virtual environment may provide advantages for engaging historically underrepresented stakeholders in district decision-making—parents who cannot drive in the evening to the district office may be able to join virtually from their location. In interviews, a number of leaders said that one unexpected outcome of the shift to virtual learning had been an uptick in communication and connection between the district and community. When districts began proactively reaching out to invite families and community members to join meetings over video conference calls rather than attending in person, they removed barriers to involvement. As one principal described, "That level of family involvement is off the charts. We hope that it's not going to be an all or nothing. 'Like, okay, we're back now, we're going back to old ways.' We can now have meetings and invite families in this manner that is comfortable for them and attainable for them."



Strategies in this domain for districts to consider include:

- Design leader standards to align virtual learning with districts' overall goals for high-quality teaching and learning. If those goals are still under development, consult trusted resources such as the [National Standards for Quality Online Teaching](#).
- Include leader standards that reflect human development, relationship skills, and organizational skills, such as creating a safe culture to explore digital tools, ensuring that digital resources are sufficient and scalable, and leading and navigating change with agility.
- Include equity considerations for the virtual environment in leader standards, such as ensuring that all students have access to learning devices, internet connectivity, and teachers who are prepared to work with technology in meaningful ways.
- In addition to the [Professional Standards for Education Leaders](#), consult trusted resources such as the [International Society for Technology in Education's Standards](#).

for [Education Leaders](#) and the [Continuous Learning Rubric](#), which are specifically designed to support leadership in virtual environments.

- Arrange virtual or hybrid “town hall” style meetings¹ with community members to share goals, plans, and expectations regarding virtual learning, and use that input to inform the development of leader standards. These meetings can also give stakeholders an opportunity to review and provide feedback on the standards related to virtual learning as they are developed.



Questions for district reflection include:

- How do the roles and responsibilities outlined in the leader standards align to our district’s use of virtual learning with respect to our goals for equitable, high-quality instruction? For example, if our district wants virtual learning to address how attributes such as race, ethnicity, assets, and disabilities impact the ways students learn, then do the leader standards address the role of the principal in supporting teachers to leverage technology in ways that attend to learner variability?
- Do our leader standards reflect common responsibilities for leaders in virtual settings, such as data governance, instructional design for virtual learning, regularly engaging families and community stakeholders, and systems thinking?
- To what extent do our leader standards include considerations for equity in a virtual environment (e.g., removing barriers to access resources for virtual learning)?
- How can community stakeholders provide insights and feedback about their needs for virtual learning in leader standard development?

Domain 2: High-quality pre-service principal preparation

With standards established, districts developing a principal pipeline might next attend to pre-service principal preparation. Principal preparation programs are a primary means for providing aspiring principals with the tools they need to lead their schools effectively (Grissom et al., 2019). When recruiting potential candidates for these programs, districts might identify teacher leaders who excel at virtual learning as a recruitment strategy, as these educators may show promise for leading in virtual settings.

Educators who complete pre-service principal preparation programs learn about the traditional aspects of leading a school, such as operations, management, and instructional leadership. Current pre-service programs often do not adequately prepare school leaders to implement virtual learning (McLeod et al., 2018) or address issues of equity and access in technology-rich schools (Khalifa et al., 2016). Districts might review existing pre-service coursework from various institutions, evaluating whether they are in line with the virtual learning needs of the schools these programs are expected to serve (Darling-Hammond et al., 2007).

Districts are encouraged to establish close working relationships with universities and others providing pre-service principal preparation so that they can advocate for changing needs (Turnbull et al., 2016). Districts can then work with partner programs to add rigorous components for virtual leadership. One principal interviewed said,

¹ For examples of town hall style meetings, [watch examples from the Digital Promise League of Innovative Schools](#).

"A lot of the ability to be open to implementing virtual learning or to be willing to take instructional risks, those are rooted in values and overarching skill sets that I think pre-service principal programs can certainly touch on. They can prepare you for how to be flexible, how to support individuals, and how to re-examine current systems to see if there's a way to improve."

Improving partner programs is unlikely to yield immediate effects since principal candidates may spend between three to 10 years in preparation (Turnbull et al., 2016). Therefore, districts may wish to supplement learning for principals and principal candidates. (See more in on-the-job support, below). As one principal said, "The way I would do it here in [my district] is not how I would have done it in other districts because the needs are different and where the kids are is different ... I think there's some base

knowledge for pre-service, but then there should be follow-up definitely per district because the needs are just different. It's night and day from community to community."



Strategies in this domain for districts to consider include:

- Collaborate with regional pre-service programs to ensure that their curriculum meets the virtual learning needs of your schools.
- Advocate for pre-service training led by or including experts who have real-world experience leading in a virtual context.
- Benchmark local pre-service programs against what is happening statewide or nationwide in preparing leaders to thrive in the virtual context.
- Supplement pre-service preparation with district-wide training that addresses the district's specific goals for equity-centered leadership in a virtual environment.
- Emphasize the connection between equity and quality of instruction by paying attention to redesigns of pre-service that deeply integrate equity with the virtual environment².
- Prepare principals to be agile and adaptable by working with programs that include change management coursework as part of principal preparation.



Questions for district reflection include:

- To what extent do our local principal preparation programs address school leadership, inclusive access, and meaningful use? Are our programs as good as those we see elsewhere in our state or nationally?
- How can our district partner with local institutions to ensure that coursework includes the types of skills and competencies that principals in our district need to be equipped with to integrate and align virtual learning with an overall program of high-quality instruction?
- How can district-provided professional learning supplement the training for leadership in a virtual context that principal candidates receive in their preparation programs?

² For example, the [University of Connecticut Administrator Preparation Program](#) redesigned its offerings to center equity.

Domain 3: Selective hiring and placement of principals

Effective pre-service preparation will not, in itself, ensure a principal's success. When developing a principal pipeline, districts strategically plan for the hiring and placement of principals who are well matched to specific schools. Districts might now consider how their hiring and placement processes were impacted by the virtual environment and how those impacts might inform improvements to their practices.

When building a hiring pool, districts might consider conducting interviews in a virtual setting as a way to see how candidates engage in that environment. However, district personnel must also be aware of how a virtual hiring space can exacerbate bias. It may advantage candidates who have previously had better access to technology or who themselves have had greater access to powerful learning experiences. Using a process for recognizing biases prior to engaging in the hiring process and using tools such as a hiring rubric during the process can help hirers make a well-reasoned decision informed by all the evidence available.

Once a hiring pool is established, principal placement should be based on a match between the candidate and the school, using data and information that have been collected about the candidate through the hiring process. To set both the principal and the school up for success in a virtual environment, it is critical that principals be placed in an environment where their skills and backgrounds fit well with the context and needs of the school community. Effective systems for placement ensure that principal candidates have the necessary contextual knowledge and technical skills to meet the needs of the community they will serve (Castro et al., 2018). For example, principal candidates who are considered for positions in under-resourced schools should have the demonstrated ability to advocate on behalf of their students and teachers for technology access and meaningful use, among other key resources (Khalifa et al., 2016). If a particular school is experiencing highly technical problems with network bandwidth or other issues, it is important to consider whether the principal placed there is the right person for these challenges, or if they might benefit from supplementary support on the purely technical issues from their district, so they can focus on the challenges closer to teaching and learning.



Strategies in this domain for districts to consider include:

- Identify and plan for how a virtual hiring space might advantage or disadvantage candidates.
- Recognize biases, especially those related to technology and virtual learning, in the hiring committee as a part of the hiring process. Consider using exercises such as [explorations of social identities](#) from the National Museum of African American History and Culture or [race and identity journey maps](#) from the Rock Dove Collective to help the committee reflect on privilege and power as they relate to hiring.
- Revise interview questions to reflect standards for technology and equity-centered leadership.
- Provide authentic opportunities for candidates to demonstrate competencies relevant to equity-focused leadership in a virtual environment.



Questions for district reflection include:

- Which competencies and skills are most important in our hiring of principal candidates who will be leading virtually?
- How can the hiring process provide opportunities for candidates to demonstrate how they would use those competencies and skills to address equity and virtual learning challenges?
- What processes will we put in place to ensure that principals are well matched to their virtual environments?

Domain 4: On-the-job evaluation and support

Once placed in schools, principals need on-the-job support and evaluation that supports continued growth in the leader standards (Domain 1). Principals may also need support to make the connections between broad standards and specific initiatives strong and actionable. This is particularly true for novice principals, even if they arrived with good preparation and demonstrated skills (Anderson & Turnbull, 2016).

When considering their principal pipeline, districts might begin planning for evaluation and support with an assessment of alignment to standards and goals that reflect leadership in a virtual context. Purposefully aligning principal evaluation and support with current district initiatives—such as equity, inclusive access, social and emotional learning, community outreach, and digital learning goals—can ensure shared responsibility for meaningful use of technology at the school level and ease the transition to virtual learning for novice principals (Bloom & Tudor, 2020). One first-year principal said,

“I think that if principal supervisors are able to clearly communicate what the end goal is, even if that end goal has to adapt based on conditions that change, that goal then helps to set some parameters for [leading] virtual schools. If you don’t start with that goal, you don’t know where you’re going. There are a lot of things that may get lost in the process.”

Districts might also reflect upon how well their methods for evaluation and support reflect the virtual context. Because evaluation will likely require measuring new goals, competencies, and practices for leadership in a virtual context, district leaders may need novel ways of measuring and recognizing principals’ accomplishment of these goals. For example, when asked about their current evaluation systems, a number of principals interviewed said that their current system did not adequately recognize or hold leaders accountable for family and community

engagement. One principal said, “That’s something I think should be included and evaluated because if you’re not effective with that, you’re going to lose a lot of kids. ... I think especially in a virtual setting, that kids’ success is so tied to parent involvement that you have to do that differently.” In designing new evaluation tools, districts might look to data sources that indicate growth in meaningful technology use, based on the framework employed by the district. These might include classroom-facing models (i.e. [SAMR](#) and [T3](#)), teacher-facing models (i.e. [TPACK](#) and the [UNESCO ICT CFT](#)), or student-facing models (i.e. [TIM](#), [EEE](#) and [ISTE](#) student standards) (Bakhshaei, forthcoming)³.

³ To define the acronyms for each model: Substitution, Augmentation, Modification, Redefinition (SAMR); Translational, Transformational, Transcendent-Framework for Innovation (T3); Technological Pedagogical and Content Knowledge (TPACK); United Nations Educational, Scientific and Cultural Organization’s Information and Communication Tools Competency Framework for Teachers (UNESCO ICT CFT);

As evaluation systems are reconsidered in light of the virtual context, districts should remember that evaluation is most effective when used as a tool to help principals improve their performance through constructive feedback, professional development, and mentoring based on the evaluation results (Turnbull et al., 2013). Formative feedback is most helpful for principals in a pipeline who are learning how to lead their schools in using virtual learning technologies (Fang, 2007), and principal interviews confirmed a heightened desire for formative feedback during the shift to virtual learning. One principal said, "That's what I'm craving. I don't know how to get better unless someone else will objectively look at me and say, 'Here's some strengths and here's some weaknesses.'" Further, supervisors should be transparent in how they are using evaluation systems, being clear about the measures they're using and that they will be used for improvement, not punishment (Bloom & Tudor, 2020). Through such use of evaluation systems, even failures may be counted as successes when they help the principal work toward identifying new practices for their virtual contexts.

Performance measures also should be regularly examined to ensure that they are fair to principals in different virtual school contexts (Burkhauser et al., 2013). Virtual learning exacerbates the inequitable access to technology experienced by millions of students, along with the associated impact of the homework gap; these inequities disproportionately impact students of color and students experiencing poverty (Cator, 2019; Kuhfeld et al., 2020). As one principal supervisor said, "We have to really in a very deep way start to embed equity into the evaluation system, making sure the principals have that lens, that they're looking at how resources are being allocated within their school." While all principals should be held accountable for high-quality instructional leadership and meaningful use of technology, evaluation systems should be tailored for different circumstances and should not unfairly disadvantage or punish principals who work in challenging school environments (Burkhauser et al., 2013).



Strategies in this domain for districts to consider include:

- Align principal goals and evaluation with standards for leadership in the virtual context and link principal goals to current district initiatives.
- Use multiple measures to assess principal performance and regularly review these measures to ensure that they do not unfairly disadvantage principals who work in under-resourced schools.
- Couple evaluation with targeted, timely, formative feedback that supports innovation and risk-taking with new technologies.
- Include principals in ongoing training on the ways that technology can be leveraged to support student learning.



Questions for district reflection include:

- To what extent are our principal standards, evaluation measures, and district goals and initiatives aligned to include consideration of equity-focused leadership in a virtual environment?
- To what extent are principals held accountable in evaluations for ensuring that all students benefit from virtual learning to their fullest potential? At the same time, how

can we ensure that principals who lead more challenging school environments are not unfairly disadvantaged in the evaluation process?

- How can the district provide principals with coaching and/or mentorship around leading virtually?
- How can we create structures and provide time for principals to engage deeply in communities of practice around leading virtual environments?

Domain 5: Principal supervisors

Defining the role of the principal supervisor goes hand-in-hand with on-the-job evaluation and support. In principal pipelines, the role of the supervisor is centered on helping principals succeed as instructional leaders, as people leaders (human development or relationship skills), and as managers of complex organizations (Grissom, 2021). In a principal pipeline that supports equity-centered leadership for the virtual environment, the principal supervisor's role may need to be further refined to emphasize coaching and serving as a resource who supports innovation.

As a starting point, supervisors can attend to principals' individual differences and how each principal works best in a virtual environment. Conley (2020) suggests that investing time in understanding how the virtual environment impacts a principal's work and communication preferences will support the principal's success in what is typically a highly independent working environment. To develop a true understanding of principals' individual differences, it is especially important that the supervisor take deliberate action to build trust with their principals. One way this can be done is by approaching the evaluation process as an ongoing learning experience (Pautz, 2016), as described in Domain 4 above.

Insights into the evolving role of the supervisor may also come from these relationship-building interactions. In our interviews, for example, when asked how supervisors could better support them in leading virtual learning, principals expressed a desire for explicit norms and protocols to define ownership of decisions in a virtual context. Supervisors can provide clarity into their role by communicating which types of decisions (e.g., around finances, student attendance) need to be made in coordination with various district leaders, which can be made solely by the principal, and how this differs from in-person protocols.

Assisting with career development is another important coaching action in a virtual environment (Conley, 2020). Supervisors are well-positioned to work with principals to set up job-embedded professional learning opportunities that fit the individual needs of principals and their contexts. This professional learning can be focused on powerful learning in a virtual setting, and principal supervisors can coach principals on using school leadership to positively impact inclusive access and meaningful use. Specific examples include assessing and tailoring technology use to the needs of their school, managing and delivering curriculum in a remote climate, assigning instructional coaches, and identifying the social and emotional needs of students (Superville, 2020). Supervisors may even be able to build learning repositories, where all principals in the district may access materials and resources that help them navigate the virtual learning world. One principal said, "It's hard to lead what you don't know. Our district was very intentional to make sure that we knew the tools that our teachers were learning, which allowed us to be able to help coach our teachers through to make sure that they're using resources appropriately in a way that benefits kids."

With specific regard to the social and emotional implications of virtual learning, principal supervisors can

help principals deepen their equity-focused leadership by supporting culturally relevant instructional decisions that address social and emotional needs (Honig & Rainey, 2020; Bloom & Tudor, 2020). In a virtual context, culturally relevant instructional decisions will once again focus on issues of access and meaningful use. Do all of my student populations have equal access to virtual spaces, or will I need to create additional access opportunities? Which of my students are using technology in powerful ways? Do we even share the same definition of what “powerful uses” of technology are? To answer these questions satisfactorily, principals will need to be capable of open dialogue in a variety of environments, a nuanced skill that even otherwise well-equipped principals may not have and will need to build.

Accordingly, districts need to build supervisors’ capacity to deliver this kind of support. In many cases, supervisors will not have had the same experience of the principalship in the virtual environment as the principals they supervise, which is why understanding principals’ lived experiences is so important.

Supervisors may themselves need support in recognizing and providing feedback on effective virtual leadership, structuring virtual school visits, and providing virtual coaching and support to principals. From the superintendent down, districts should make a commitment to learning about leadership in a virtual environment.



Strategies in this domain for districts to consider include:

- Leverage technology to build trusting relationships with principals.
- Provide principals with job-embedded supports, such as personalized learning plans, professional learning opportunities, and coaching on equity-focused leadership. Consult the [Online Professional Learning Quality Checklist](#) from the Office of Educational Technology at the U.S. Department of Education for guidance on determining the effectiveness of specific virtual learning opportunities and where to invest resources.
- Gain understanding of school context and the types of support principals need for instructional leadership in a virtual context by spending time visiting virtual classrooms.
- Supplement one-on-one support from a principal supervisor with social supports, such as virtual professional learning communities or communities of practice. Consult the Office of Educational Technology’s resource, [The Future Ready District: Professional Learning Through Online Communities of Practice](#), for guidance.



Questions for district reflection include:

- How often are principal supervisors conducting virtual visits to classrooms to better understand the contextual challenges that principals face?
- How can principal supervisors foster a climate of innovation and continuous learning within a virtual environment?
- How can technology be leveraged to create an effective virtual social environment for meetings and conversations?

- To what extent are principals provided with targeted, differentiated, formative feedback on equity-centered leadership in the virtual environment?
- What resources do we need to support sustained professional learning around best practices in leading virtually? How will these resources be procured or developed?

Domain 6: Leader tracking systems

Effective systems for placement include a leader tracking system (LTS), a computer database that tracks and compiles longitudinal data to understand the career paths of principals and principal candidates. The contents of an LTS can be indicative of a well-aligned principal pipeline by reflecting the most up-to-date skills and standards that the district has determined necessary for equity-centered leadership in a virtual environment. Such systems enable districts to support current principals in applying existing skills and map out professional learning trajectories to acquire needed skills for their context.

Currently, most LTSs collect information about school leaders, such as educational background, employment history in and outside of the district, teacher and student ratings, professional development completion, and mentoring and residency (Latterman, 2017). But to fully describe candidates for equitably leading in a virtual environment, these systems may need additional data. For instance, they can contain data that describes social measures (e.g., evidence of actions that contribute to closing the digital learning gap) or connections in the community (e.g., records of past collaboration, community participation, and community initiatives) that can be used alongside other factors that promote equitable virtual leadership. For example, one principal supervisor shared that the need to identify leaders for the virtual environment accelerated the development of a leader tracking system, which now includes new types of data to support hiring: “We want to make sure we’re making the best decisions possible, especially since we’re not necessarily in the same room all the time, or we may not know them as well. [As a result], we’re doing a better job of screening individuals on the front end for those leadership qualities that we know are going to be needed in years to come because it’s really hard. If people don’t have a mind to be equitable or to be inclusive, it’s hard to make them make that switch once they get into the program.”



Strategies in this domain for districts to consider include:

- Consider how the types of data collected in the LTS align with standards for leadership in the virtual context.
- Conduct inventories of data currently collected by the LTS and add opportunities to track evidence of equity-centered, virtual leadership.
- Determine how the new data gathered in the LTS will be sorted and weighted in decision-making about hiring and placement.



Questions for district reflection include:

- What types of measures should our district collect around leadership in a virtual setting? When should this data be collected and how should it be weighted?
- How can a leader tracking system help us identify aspiring principals with the competencies and skills needed for equity-focused leadership in the virtual environment?

Domain 7: Systems and sustainability

The sustainability of principal pipelines is dependent on establishing systems that will embed these practices in the organization. These systems serve to codify policy, align the prior six domains, and enable ongoing feedback for continuous improvement of the pipeline. Without specific attention to articulating how a district implements continuous improvement, district practice is liable to become disjointed, misaligned, and counterproductive to good practice (Wayman & Jimerson, 2014).

With a heightened emphasis on equity-centered leadership in the virtual environment, principals and supervisors in three of the five districts in our interviews recommended that pipeline leadership dedicate more time to meetings, round tables, and one-on-one interaction with principals. This would allow a better understanding of their day-to-day challenges with leading virtual learning and leadership in the virtual context. Additionally, they suggested that district leaders regularly meet to coordinate the support that they deliver to principals and align their understanding of principals' needs and progress. In the remaining two districts represented, principals and supervisors described having this type of consistent communication and interaction and said that it was an ingredient of their success in leading virtually. One principal supervisor said, "[Principal supervisors, mentors, and other relevant district leaders] meet collectively and we calibrate to say, 'Are we seeing the same thing?' Especially if there's some support needed because it is probably showing up in various areas. We meet quarterly to make sure that we're calibrating and giving the best support we can to that principal. That's the format for throughout the pipeline."

In a virtual context, it is especially important that school and district leaders understand the implications of changing processes and decisions in one department, and how they impact the system as a whole. For example, curriculum directors need to understand procurement and data security decisions made by the technology director, and principals need to be looped in as well. In the words of one principal, "I can't do it all on my own. It's got to be a bigger team working together."

District leaders might consider how ongoing articulation of the vision for the pipeline engages current and aspiring leaders who excelled during virtual learning, seeking their input into leader standards, professional learning and support, and hiring practices. This includes exploring untapped resources of teachers who have valuable contributions to make and want to take on additional leadership roles—whether they have aspirations to leave the classroom and become principals or not. As one principal said, "More than ever, the principal in this increasingly complex world of leading a school can't do it all him or herself. How do we better leverage the teacher leaders within our system too?"

Finally, as leadership needs in the virtual environment evolve, district leadership may update their principal pipeline in response. In making changes to their pipeline, districts should employ equity-focused frameworks and tools to interrogate those changes with an equity lens (Hyer et al., 2020). In interviews, a number of principals and district leaders acknowledged that decision-making during the rapid shift to virtual learning was like "building a plane and flying the plane" simultaneously. As districts move forward, deep reflection on the vision and infrastructure for sustainability of the virtual learning environment is important.



Strategies in this domain for districts to consider include:

- Create processes for ongoing communication regarding the alignment of the pipeline with goals for equity and virtual learning leadership.
- Identify and apply equity-focused frameworks and tools when making changes to the pipeline to support virtual leadership⁴.



Questions for district reflection include:

- How can we ensure that principal supervisors, principals, and other district leaders have a shared understanding of district needs, initiatives, and goals around equity and virtual learning?
- If current district leadership changes, will updates made to the pipeline domains specific to the virtual environment continue?
- As technology and stakeholder needs continue to evolve in the virtual environment, what mechanisms are in place for updating the principal pipeline? How are we ensuring that leadership takes an equity lens when making those decisions?

⁴ While not specifically focused on the virtual context, the [Districts Advancing Racial Equity \(DARE\) tool](#) from the Learning Policy Institute can be a useful resource for considering district actions that can support equity.

Chapter 5: Future Research

Chapter 5: Future Research

Studies on the impact of virtual learning on principal leadership are just beginning to emerge. We need additional research that unpacks how the three factors in our proposed equation come together and how school leaders create systems that leverage the ever-changing capabilities of learning technology for school improvement:

$$\text{POWERFUL LEARNING} = \left(\text{SCHOOL LEADERSHIP} \right) \times \left(\text{INCLUSIVE ACCESS} \right) \times \left(\text{MEANINGFUL USE} \right)$$

As we developed this report, we found it much easier to find research linking two of three of the multiplicative factors than to find research connecting all three. For example, much has been written about school leadership and equity of access, but too often the discussion leaves out considerations of what meaningful use of technology looks like. Or we can find discussions of how school leaders enable meaningful use of technology, but often the equity component is not discussed.

We were able to interview only a small number of principals and administrators, but the interviews were enlightening. Our inquiry found that the three-factor model is what today's innovative leaders are thinking about—leadership, equity, and meaningful use. Broader interviews and additional systematic analysis of what experts and innovators in the field know about the interaction of all three factors would be extraordinarily helpful. Additionally, impact studies are needed to determine how changes in the pipeline associated with the virtual environment are correlated with equitable outcomes on goals that include deeper or more meaningful learning.

We also could find little information on how technology is supporting the human capital dimensions of better principal pipelines. We found that districts are already using technology to support their hiring practices, professional learning, evaluation, and data collection, often modeling the use of technologies available to teachers and students. Promising developments in “responsible AI” may allow employers to harness the potential of AI for equitable hiring. Such tools employ algorithms that remove faces, names, gender, and race from an initial applicant pool, helping to promote objectivity while hiring (Houser 2019, pg. 324-326). However, research on the potential for bias in AI-based hiring tools is needed before they can be recommended.

“Times like these [call for us] to ask district and building-level administrators, as well as teachers, as well as students, parents, and members of the community, to really reimagine what education and school looks like in a virtual setting.”

- Principal

In addition, we have emphasized that integrating virtual learning is a continuous improvement process. We found that more and better longitudinal studies are needed to understand continuous improvement. As these areas for future research take shape and new recommendations emerge, it is important for districts to remember that the principal pipeline requires a plan for continuous improvement. Proper implementation is an iterative process that brings many stakeholders into planning and implementation.

While time consuming, the outcome is preparedness, resilience, and representativeness. Students ultimately benefit because challenging issues can be solved.

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Appendix A: Characteristics of Interview Participants and Their Districts

Participant	Participant Characteristics	District Characteristics
District Leader 1	Superintendent 20+ years of experience in administration	Small district (~3000 students) in a large New York suburb ~25% of students qualify for free or reduced lunch; 70% white, 18% Hispanic or Latino, 8% Asian
District Leader 2	Deputy Superintendent 20+ years of experience in administration	
Principal 1	First year as a middle school principal, previously an assistant principal in the same district for 5 years	
District Leader 3	Director of Leadership Development 20+ years of experience in administration	Very large district (~270,000 students) in a large suburb in the Southeast ~60% of students qualify for free or reduced lunch; 37% white, 29% Hispanic or Latino, 28% Black, 4% Asian
Principal 2	14 years as an elementary principal, 9 years as an assistant principal (all within the same district) Multiple accolades including the district Principal of the Year award	
Principal 3	10+ years of experience as a high school principal Leads school with demographics of ~90-95% Black students and ~85% Black faculty and staff Has participated in district principal supervisor training and served as an intern principal supervisor	
Principal 4	First year as an elementary principal, previously 1 year of experience as an assistant principal in another district Leads a Virtual Academy (school had fully remote instruction pre-pandemic)	

Principal 5	10+ of experiences as an elementary school principal	<p>Large district (~25,000 students) in a midsize Northeastern city</p> <p>~57% of students qualify for free or reduced lunch; 56% white, 21% Hispanic or Latino, 12% Black, 8% Asian</p>
Principal 6	First year principal	
Principal 7	3 years of experiences as an elementary school principal, previously 5 years of experience as an assistant principal	
Principal 8	First year working in the district and first year as a middle school principal; previously served as an assistant principal in another district	<p>Small district (~6,300 students) in a small suburb in the Midwest</p> <p>~95% of students qualify for free or reduced lunch; 79% white, 12% Black, 4% Hispanic or Latino, 1% Asian</p>

Appendix B: Interview Protocols

Principal Interview Protocol

1. Where along the continuum would you place your school in terms of instructional technology use before and after the school closures?
2. Will you be keeping any of the changes you made to device access, instructional support, or professional learning? Why or why not?
3. To what extent did your role as a school leader change in the context of virtual learning?
4. What are the most important lessons for a school leader in a virtual context in terms of:
 - a. Supporting teacher professional learning around meaningful use of technology
 - b. Creating a safe and inclusive culture where teachers and staff feel supported in trying new instructional methods
 - c. Actional plans for equity and inclusive access in learning and instruction
5. How well did your pre-service principal program prepare you for leading a school that is implementing virtual learning in an equitable and inclusive manner?
6. What training and coursework is necessary for new principals who are in pre-service training now?
7. What skills and abilities should districts look for when hiring and placing principals that will implement virtual learning?
8. This past year, what support or professional learning has been most helpful to you as a school leader? Why?
9. What could principal supervisors do to better support principals in leading virtual schools?
10. Thinking back on everything you learned this past year, what changes, if any, should be made to the district's evaluation process for principals?
11. Is there anything I should have asked but didn't? Is there anything else you can share that is related to any of the pipeline domains?

Principal Supervisor Interview Protocol

1. Where along the continuum would you place your district in terms of instructional technology use before and after the school closures?
2. Will you be keeping any of the changes you made to device access, instructional support, or professional learning? Why or why not?
3. To what extent has your district revised the school leader standards to reflect principals' leadership responsibilities in a virtual context?
4. To what extent have you worked with your local higher ed institution(s) to develop virtual pre-service principal programs that align with district needs?

5. What training and coursework is necessary for new principals who are in pre-service training now?
6. What lessons have you learned that you could share with other districts about the hiring process for principals in a virtual context?
7. What could principal supervisors or district leads do to better support principals in leading virtual schools?
8. What data has been (or could be) most valuable for making decisions around virtual leadership? (e.g., candidate placement, improving professional support, forming a diverse pool of applicants.)
9. Thinking back on everything you learned this past year, what changes, if any, should be made to the district's evaluation process for principals?
10. How does your district plan to maintain the changes you've made this year to the different components that make up a principal pipeline?
11. Is there anything I should have asked but didn't? Is there anything else you can share that is related to any of the pipeline domains?

Appendix C: Strategies for Districts to Consider and Questions for Reflection

Domain 1: Leader standards

Strategies to Consider

- Design leader standards to align virtual learning with districts' overall goals for high-quality teaching and learning. If those goals are still under development, consult trusted resources such as the [National Standards for Quality Online Teaching](#).
- Include leader standards that reflect human development, relationship skills, and organizational skills, such as creating a safe culture to explore digital tools, ensuring that digital resources are sufficient and scalable, and leading and navigating change with agility.
- Include equity considerations for the virtual environment in leader standards, such as ensuring that all students have access to learning devices, internet connectivity, and teachers who are prepared to work with technology in meaningful ways.
- In addition to the [Professional Standards for Education Leaders](#), consult trusted resources such as the [International Society for Technology in Education's Standards for Education Leaders](#) and the [Continuous Learning Rubric](#), which are specifically designed to support leadership in virtual environments.
- Arrange virtual or hybrid "town hall" style meetings⁵ with community members to share goals, plans and expectations regarding virtual learning, and use that input to inform the development of leader standards. These meetings can also give stakeholders an opportunity to review and provide feedback on the standards related to virtual learning as they are developed.

Questions for Reflection

- How do the roles and responsibilities outlined in the leader standards align with our district's use of virtual learning with our goals for equitable, high-quality instruction? For example, if our district wants virtual learning to address how attributes such as race, ethnicity, assets, and disabilities impact the ways students learn, then do the leader standards address the role of the principal in supporting teachers to leverage technology in ways that attend to learner variability?
- Do our leader standards reflect common responsibilities for leaders in virtual settings, such as data governance, instructional design for virtual learning, regularly engaging families and community stakeholders, and systems thinking?
- To what extent do our leader standards include considerations for equity in a virtual environment (e.g., removing barriers to access resources for virtual learning)?
- How can community stakeholders provide insights and feedback about their needs for virtual learning in leader standard development?

⁵ For examples of town hall style meetings, [watch examples from the Digital Promise League of Innovative Schools](#)

Domain 2: High-quality pre-service principal preparation

Strategies to Consider

- Collaborate with regional pre-service programs to ensure that their curriculum meets the virtual learning needs of your schools.
- Advocate for pre-service training led by or including experts who have real-world experience leading in a virtual context.
- Benchmark local pre-service programs against what is happening statewide or nationwide in preparing leaders to thrive in the virtual context.
- Supplement pre-service preparation with district-wide training that addresses the district's specific goals for equity-centered leadership in a virtual environment.
- Emphasize the connection between equity and quality of instruction by paying attention to redesigns of preservice that deeply integrate equity with the virtual environment⁶.
- Prepare principals to be agile and adaptable by working with programs that include change management coursework as part of principal preparation.

Questions for Reflection

- To what extent do our local principal preparation programs address school leadership, inclusive access, and meaningful use? Are our programs as good as those we see elsewhere in our state or nationally?
- How can our district partner with local institutions to ensure that coursework includes the types of skills and competencies that principals in our district need to be equipped with to integrate and align virtual learning in an overall program of high-quality instruction?
- How can district-provided professional learning supplement the training around virtual learning that principal candidates receive in their preparation programs?

Domain 3: Selective hiring and placement of principals

Strategies to Consider

- Identify and plan for how a virtual hiring space may advantage or disadvantage candidates.
- Recognize biases, especially those related to technology and virtual learning, in the hiring committee as a part of the hiring process. Consider using exercises such as [explorations of social identities](#) from the National Museum of African American History and Culture or [race and identity journey maps](#) from the Rock Dove Collective to help the committee reflect on privilege and power as they relate to hiring.
- Revise interview questions to reflect standards for technology and equity-centered leadership.
- Provide authentic opportunities for candidates to demonstrate competencies relevant to equity-focused leadership in a virtual environment.

⁶ For example, the [University of Connecticut Administrator Preparation Program](#) redesigned its offerings to center equity.

Questions for Reflection

- Which competencies and skills are most important in our hiring of principal candidates who will be leading virtual learning?
- How can the hiring process provide opportunities for candidates to demonstrate how they would use those competencies and skills to address equity and virtual learning challenges?
- What processes will we put in place to ensure that principals are well matched to their virtual environments?

Domain 4: On-the-job evaluation and support

Strategies to Consider

- Align principal goals and evaluation with standards for leadership in the virtual context and link principal goals to current district initiatives.
- Use multiple measures to assess principal performance and regularly review these measures to ensure that they do not unfairly disadvantage principals who work in under-resourced schools.
- Couple evaluation with targeted, timely, formative feedback that supports innovation and risk-taking with new technologies.
- Include principals in ongoing training on the ways that technology can be leveraged to support student learning.

Questions for Reflection

- To what extent are our principal standards, evaluation measures, and district goals and initiatives aligned to include consideration of equity-focused virtual learning?
- To what extent are principals held accountable in evaluations for ensuring that all students benefit from virtual learning to their fullest potential? At the same time, how can we ensure that principals who lead more challenging school environments are not unfairly disadvantaged in the evaluation process?
- How can the district provide principals with coaching and/or mentorship around leading virtual learning?
- How can we create structures and provide time for principals to engage deeply in communities of practice around leading virtual environments?

Domain 5: Principal supervisors

Strategies to Consider

- Leverage technology to build trusting relationships with principals.
- Provide principals with job-embedded supports, such as personalized learning plans, professional learning opportunities, and coaching on equity-focused leadership. Consult the [Online Professional Learning Quality Checklist](#) from the Office of Educational Technology at the U.S. Department of

Education for guidance on determining the effectiveness of specific virtual learning opportunities and where to invest resources.

- Gain understanding of school context and the types of support principals need for instructional leadership in a virtual context by spending time visiting virtual classrooms.
- Supplement one-on-one support from a principal supervisor with social supports, such as virtual professional learning communities or communities of practice. Consult the Office of Educational Technology's resource, [The Future Ready District: Professional Learning Through Online Communities of Practice](#), for guidance.

Questions for Reflection

- How often are principal supervisors conducting virtual visits to classrooms to better understand the contextual challenges that principals face?
- How can principal supervisors foster a climate of innovation and continuous learning within a virtual environment?
- How can technology be leveraged to create an effective virtual social environment for meetings and conversations?
- To what extent are principals provided with targeted, differentiated formative feedback on their leadership of virtual learning?
- What resources do we need to support sustained professional learning around best practices in leading virtual learning? How will these resources be procured or developed?

Domain 6: Leader tracking systems

Strategies to Consider

- Consider how the types of data collected in the LTS align with standards for leadership in the virtual context.
- Conduct inventories of data currently collected by the LTS and add opportunities to track evidence of equity-centered, virtual leadership.
- Determine how the new data gathered in the LTS will be sorted and weighted in decision-making about hiring and placement.

Questions for Reflection

- What types of measures should our district collect around leadership in a virtual setting? When should this data be collected and how should it be weighted?
- How can a leader tracking system help us identify aspiring principals with the competencies and skills needed for leading equity-focused virtual learning?

Domain 7: Systems and sustainability

Strategies to Consider

- Create processes for ongoing communication regarding the alignment of the pipeline with goals for equity and virtual learning leadership.
- Identify and apply equity-focused frameworks and tools when making changes to the pipeline to support virtual leadership.

Questions for Reflection

- How can we ensure that principal supervisors, principals, and other district leaders are aligned in their understanding of district needs, initiatives, and goals around virtual learning?
- If current district leadership changes, will updates made to the pipeline domains around virtual learning continue?
- As technology and student needs for virtual learning continue to evolve, what mechanisms are in place for updating the principal pipeline?
- What mechanisms are in place to ensure that leadership takes an equity lens when making decisions in updating the pipeline systems to attend to virtual learning?