The Potential for Improvement Science and Research Partnerships to Maximize the Policy-

Relevance of School Improvement Research

Sarah Winchell Lenhoff

Jeremy Singer

Ben Pogodzinski

Wayne State University

Now published in *Maximizing the Policy-Relevance of Research for School Improvement*

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Increased demands by policymakers for evidence-based practices and rigorous impact evaluations in education offer researchers an unprecedented opportunity to influence policy (Tseng, 2012). Yet, academic research has an infamous reputation for not addressing the real problems of policy and practice (Bevan, 2017; Lopez Turley & Stevens, 2015; Polikoff & Conway, 2018; Thompson et al., 2017), being difficult to understand (Penuel et al., 2018), and being slow to adapt to changing circumstances in implementation (Penuel et al., 2015; Polikoff & Conway, 2018). The increasing complexity of the educational policy landscape (Lubienski, 2018) threatens to exacerbate the disconnect between researchers and policymakers. Researchers interested in school improvement cannot be content to "illuminate and critique these processes of knowledge production and use;" rather, we must seek ways to "become more effective operators within the knowledge-exchange environments that surround contemporary policymaking" (Lupton & Hayes, 2018, p. 203).

This chapter addresses Lupton & Hayes' (2018) call for educational researchers "to develop our own pedagogical dispositions and strategies towards policymaking" (p. 203) by considering the opportunities offered by improvement science and research partnerships. Both improvement science and research-practice partnerships (RPPs) are increasingly popular approaches to improving practices within schools, and a growing body of research demonstrates their potential to improve educational outcomes (see Bryk et al., 2015; Coburn & Penuel, 2016). Little research has investigated how these approaches might be beneficial in improving the quality and influence of research itself. By turning these approaches inward, can researchers use

the principles of improvement science and RPPs to maximize the policy-relevance of school improvement research?

We seek to address this question in three parts. We begin this chapter with a review of the literature on improvement science and RPPs, and we consider how their core principles align with the interests of researchers seeking to produce policy-relevant work. Then, we analyze the key opportunities and challenges of enacting these principles by reflecting on our own research partnership grounded in improvement science. We conclude with important lessons for researchers who seek to influence policy through partnerships and suggest directions for future research and applications of improvement science in policy-focused research teams.

Policymakers, Researchers, and Research Use in Education

Education is a complicated field for the use of research in policymaking. Because education is inherently ideological, policymakers may be particularly skeptical of empirical claims (Lubienski, 2018). Further, ideology, politics, and power play a significant role in shaping both the production of educational research and how different types of knowledge are valued in the field of education (Lupton & Hayes, 2018; Gerrard, 2015). Practitioners often react to research and evidence that is not specific to their context with skepticism, and sparse social networks among and between educators can weaken the uptake of research (Daly et al., 2014; Finnigan, Daly, & Che, 2013).

The terrain for research-use in educational policymaking has only become more complex with the shift from 'government' to 'governance' and the increasing influence of a variety of non-governmental actors (Scott et al., 2017). Intermediary organizations, which "seek to assemble, interpret, and advance information for policymakers to use in the policymaking process," often "operate in a space largely removed from more traditional forms of expertise,

with increasingly obsolete forms of quality control to evaluate information claims" (Lubienski, 2018, pp. 160-161). The growing influence of intermediary organizations (e.g., research consortia, advocacy groups, and education-focused philanthropies) (Scott et al., 2017; Tseng, 2012) signals a disruption to the 'iron-triangle' of interest groups, the Department of Education, and Congressional committees in education policymaking (Scott & Jabbar, 2014) as well as a decrease in the influence of school boards and other traditional policymakers (Henig, 2013). As a result, "an infrastructure of rapid production and dissemination of data," has given policymakers more opportunities than ever to learn about research evidence and apply that learning in their policymaking (Lubienski, 2018, p. 157).

Empirical research casts doubt, however, on whether knowledge that passes through this information landscape is actually used by policymakers. For instance, studying the policy landscape in New Orleans, Jabbar et. al (2015) "found that policymakers primarily used personal anecdotes to justify their position and explain the success of reforms, and they relied on blogs or non-peer-reviewed sources for background information" (p. 1). These dynamics are further complicated by their local contexts. From place to place, levels of cohesiveness, consensus, mobilization, resource allocation, and trust between key policy actors can vary widely (Lubienski, 2018; Scott et al., 2017), making studies of research use difficult to generalize to other contexts, with different policy players and histories. Thus, although there is an unprecedented stated demand and opportunity for research-based policies, the complexities of the current educational policymaking landscape threaten to expand the divide between researchers and policymakers.

In addition, while researchers might use the terms "research" and "evidence" interchangeably, policymakers often define evidence beyond "empirical findings derived from

scientific methods"—including student achievement data, expert testimony, practitioner knowledge, community input, personal experiences, experiences of others, and constituent feedback (Tseng, 2012, p. 6). This tendency toward a broad definition of evidence carries risk as policymakers and educational leaders consider investing in programs and policies that claim to be research-based (Penuel et al., 2018). Intermediary organizations with a high degree of influence and access to policymakers and educational leaders exacerbate this risk as they offer their own data, which may be inappropriately conflated with professional judgment and ultimately yield to ideological commitments (Trujillo, 2014).

Importantly, barriers to high quality research-use do not solely arise from the policymaking side. Indeed, Farley-Ripple, May, Karpyn, Tilley, & McDonough (2018) conceptualize a bidirectional gap between communities of research and practice, pointing to competing assumptions and perspectives on the products, inquiry, problems, structures, and processes of knowledge use (see Dunn, 1980) that can grow or shrink the gap along six different dimensions of 'depth,' from the conceptualization of research design through the use of evidence at the decision-making stage. Tseng (2012) argues that "connecting research and practice should be more of a two-way street" (p. 6) and points toward defining, acquiring, interpreting, and using research as four areas where research producers and research users diverge. However, academics have tended to operate under a producer-push model (Nutley et al., 2007) that shifts responsibility for policy learning from research producers onto research users. As Lupton and Hayes (2018) note, researchers use these "traditional modes of academic dissemination" to "'throw it over the wall' and see what gets picked up, and complain that our lack of influence is someone else's fault" (p. 203). This mode of operating has left researchers with a poor

understanding of how policymakers "pull" research (Dearing & Kreuter, 2010) and ultimately undermines efforts to create policy-relevant research.

Improvement Sciences and the Policy-Relevance of Research

The emergence of improvement science in education research has introduced new frameworks within which academic researchers can expand the policy relevance of their work and develop common practices for making research more relevant across contexts (Lewis, 2015). Improvement science is a theory of improvement that gained popularity in the medical field as a way to develop quality improvements in common practices, such as how to respond to potential cardiac arrests (Berwick, 2008). The auto industry has also embraced improvement science as a way to systematically improve efficiency and productivity (Womack & Jones, 2003).

As an approach to continuous improvement, improvement science is organized around identifying problems in work processes that are associated with key outcomes. By systematically designing improvements to those work processes, testing innovations, making adjustments based on evidence, and implementing the innovations in more and varied contexts, workers may be able to improve desired outcomes at scale (Bryk, Gomez, Brunow, & LeMahieu, 2015; Grunow, Hough, Park, Willis, & Krausen, 2018). This approach to improvement is a complement to large-scale impact evaluations that rely on fidelity in implementing a common reform model across many sites. While these evaluations are useful for understanding the average impact of a reform, they have been critiqued for their lack of usefulness in early stages of improvement and their inattention to uneven implementation or necessary adaptations (Peurach, Glazer, & Lenhoff, 2016).

Researchers have promoted several methods to enact improvement science, such as networked improvement communities (Bryk, Gomez, Brunow, & LeMahieu, 2015), design-

based implementation research (Fishman, Penuel, Allen, Cheng, & Sabelli, 2013), and Six Sigma (Aboelmaged & Lichtman, 2010). A set of core principles links these and other continuous improvement methods together: a) systems, rather than individuals, create outcomes; b) processes within systems can be changed to improve outcomes; c) improvement requires "collective learning and discovery;" d) the people who are directly responsible for the practices that need improving are in the best position to identify problems and potential solutions; e) and effective practices are eventually codified into "standard work processes" throughout the system (Grunow, Hough, Park, Willis, & Krausen, 2018, p.12).

The principles of improvement science lend themselves to collaborative work between researchers and practitioners. As researchers seek to inform educational improvement, they can support teams of educators by bringing research evidence to bear in designing changes to practice, introducing tools of measurement to track progress, and evaluating implementation of scale-up across sites (Cohen-Vogel et al., 2014). There are several examples of successful practice improvements that have emerged out of these types of research partnerships, including improving developmental mathematics instruction in community colleges (Edwards, Sandoval, & McNamara, 2015; Gomez et al., 2015); strengthening the early career experiences of teachers (Hannan, Russell, Takahashi, & Park, 2015); and designing professional supports for the enactment of the Next Generation Science Standards (Anderson et al., 2018).

In most examples of continuous improvement in education, the principles of improvement are used to support the design, measurement, and scale up of instructional innovations in classrooms. This makes sense: improving the "core of educational practice" is both essential and historically very difficult (Elmore, 1996, p. 2). Yet, many of the most persistent problems in education stem from structural and social issues that require large-scale

policy changes. To strengthen the ability of researchers to influence system-level policy changes, the research process itself may benefit from a disciplined inquiry approach, grounded in the principles of improvement science. For education researchers, producing policy-relevant research could be conceived as an *outcome* that is produced through *processes* within their *practice* as researchers. Framing the work of researchers in this way allows us to consider how to organize research teams with a continuous improvement management philosophy, drawing on the tools and methods of improvement science to get better at producing policy relevant research.

A commitment to the core principles of improvement science in education policy poses a challenge to policymakers. Policymakers must actively resist the tendency of "going fast and learning slow," in favor of modest and gradual policy increments informed by "learning quickly and cheaply...while also generating empirical guidance as to what to try next" (Bryk et al., 2015, p. 6; 16). Further, education policymakers must resist the silver-bullet thinking pervasive in contemporary policymaking (see Peck & Theodore, 2015) and must consider not only what works on average but also what works for whom and under what conditions. Indeed, as Bryk et al. (2015) argue, "quality improvement challenges policy actors toward more prudent aspirations" and to "recognize the limits of what they actually know and are able to directly affect in a complex system" (p. 191).

Likewise, improvement science may prompt researchers to address the dispositional barriers that can diminish the policy-relevance of their work. Academic researchers are likely to hesitate to move beyond uncertainties (Heimans & Singh, 2018; Polikoff & Conaway, 2018) and may point to instances where certain types of evidence do not necessarily form a good basis for decision-making (e.g. Sanderson 2003; Simons, 2003). They are reluctant to offer a decisive recommendation (Polikoff & Conway, 2018), and often proceed slowly through cycles of inquiry

and analysis before recommending action (Penuel et al., 2015). While improvement science prompts policymakers to slow down, it prompts researchers to speed up. As policymakers embrace a more prudent policy approach, researchers must embrace "unforesee-ability" in education research (Heimans & Singh, 2018) and the reality that "failures are unavoidable when one is trying to change complex social systems" (Bryk et al., 2015, p. 179). Thus, researchers must be willing to make specific and concrete recommendations to policymakers as an ongoing part of the policymaking process (Polikoff & Conway, 2018).

In addition, improvement science may help address the structural barriers that researchers face in seeking to make their work more useful and relevant for policymakers. Researchers are not always interested in questions that would yield the most actionable information for practitioners and policymakers (Thompson et al., 2017), and research that is valued in academia is often not the most useful research for practitioners and policymakers (Bevan, 2017; Lubienski, 2018; Penuel et al., 2018). Indeed, the primacy many universities put on "intellectually interesting questions" and academic publications can disincentivize researchers from pursuing applied work (Lopez Turley & Stevens, 2015). Improvement science may help researchers take a problem-specific and user-centric approach that prioritizes the needs of practitioners and policymakers. In doing so, it may encourage universities to "embrace a mission that directs intellectual resources both to advancing basic understanding about education problems and actively contributing to their solutions" (Bryk et al., 2015, p. 190).

Adopting principles of improvement science that school improvement researchers have increasingly promoted for practitioners and policymakers may help them advance the policy-relevance of their research. These principles call upon researchers interested in informing policy to ask "three core improvement questions" about their own work: "What is the specific problem I

am now trying to solve? What change might I introduce and why? And, how will I know whether the change is actually an improvement?" (Bryk et al., 2015, p. 9). On one hand, these questions, and a deliberate commitment to the principles of improvement science that they necessitate, may offer a starting point for researchers as they develop dispositions and strategies to influence policy. However, the professional incentives, training, and interests of researchers pose threats to the use of improvement science to inform policy-relevant work in traditional research institutions. One long-term goal of this project is to explore the possibilities of orienting university-based research activities around the principles of improvement science and documenting the challenges and opportunities in that approach within both the policy sphere and our professional outlets.

Research Partnerships and the Policy-Relevance of Research

Research-practice partnerships (RPPs) in education also offer a useful set of principles and practices for advancing the policy-relevance of research (Farrell et al., 2018). Coburn and Penuel (2016) note that many forms of partnerships exist between researchers and practitioners, and define RPPs as one "very specific form of partnership" (p. 49) with a set of distinguishing features (see Coburn et al., 2013). In contrast to 'smash-and-grab' or one-off arrangements between researchers and practitioners (Bevan, 2017), RPPs are long-term: "researchers and system leaders share an open ended commitment to build and sustain a working collaboration over multiple projects" (Coburn & Penuel, 2016, p. 49). Aligned with the principles of improvement science, RPPs set their research priorities based on challenges that practitioners face, rather than gaps in existing theory or research (Coburn & Penuel, 2016; Coburn et al., 2013).

The emphasis on practitioner needs does not mean that RPPs simply reverse the one-directional relationship between researchers and practitioners. Rather, as Penuel et al. (2015) theorize, RPPs represent "joint work at boundaries"—"both district goals for improvement and aspects of the research are defined and evolve through interaction, rather than being planned fully ahead of time or defined by either researchers or practitioners independently of one another" (p. 183). In this way, RPPs challenge the translation metaphor that the research community has predominantly used to characterize the gap between research and practice (Penuel et al., 2015). Penuel et al. (2015) note that framing the gap between research and practice as a problem of translation inappropriately depicts the work of bridging that gap as a directional movement from research to practice. Further, they demonstrate that the translation metaphor inaccurately describes when interventions and programs are replicated in new settings, betrays the possibility of mutualism and reciprocity, and offers too narrow a conception of research use by practitioners. Indeed, RPPs produce original analyses of data, going "beyond the focus of many current organizations on making data accessible to district leaders" (Coburn et al., 2013, p. 4).

The long-term, responsive, and jointly negotiated nature of RPPs serve as an important complement to the principles of improvement science. Improvement science maintains that "it is essential that all involved in the work be active agents in its improvement" (Bryk et al., 2015, p. 34). Because researchers' social networks of influence tend to be removed from the levers of power in policymaking, RPPs are important for creating the circumstances that make such collaboration possible (Boyask & Vigurs, 2018). Researchers in RPPs can use improvement science to more actively and effectively engage with those decision-makers when preparing, conducting, and disseminating research.

Against the backdrop of a highly complex and contentious educational policymaking landscape, the structure of RPPs can help researchers and policymakers productively engage each other in the research and policymaking process (Lubienski, 2018). As joint work at boundaries, RPPs push researchers and practitioners to define, acknowledge, and cross boundaries that are cultural, professional, and organizational as well as navigate the political context in which those boundaries are situated (Coburn & Penuel, 2016; Penuel et al., 2015). Penuel et al. (2015) call for RPPs to employ "boundary practices"—"new routines that bridge the practices of researchers and those of practitioners as they engage in joint work" (p. 190)—that reframe the surfacing of cultural differences and conflict inherent in "boundary crossing" as a routine part of practice that can productively contribute to the partnership's success. The pervasive challenges of turnover, political tension, and shifting priorities in education threaten the ability of researchers and policymakers to engage in disciplined cycles of inquiry (Thompson et al., 2017). However, as researchers and practitioners jointly negotiate their work, they develop a stronger commitment to partnership and the production of research to inform improvements (Farrell et al., 2018; Bevan et al., 2015).

Further, these intentional strategies for boundary-crossing play an important role in establishing and maintaining the mutual benefit for researchers and policymakers. Partnerships between researchers and policymakers in education offer tremendous benefits for both parties, because each party's needs and assets complement each other (Lopez Turley & Stevens, 2015). The possibility for mutual benefit in these partnerships can be disrupted, however, by diverging interests and issues of power and voice (Bevan, 2017; Conaway et al., 2015; Thompson et al., 2017). The RPP principles of jointly negotiated work and shared authority can help establish a relationship between researchers and policymakers in which "the problem being addressed and

the opportunity to work together is seen as benefiting both parties equally if not identically" (Bevan, 2017, p. 139).

While a growing body of research demonstrates that RPPs lead to effective educational interventions (see Coburn & Penuel, 2016), important questions remain unanswered. As Coburn and Penuel (2016) note, "Most research on the outcomes of RPPs in education and other fields has focused on the impact of interventions developed in the context of a partnership. Thus, they do not investigate the impact of the partnership itself or other outcomes of RPPs" (p. 49). More research is needed on the effect of participating in RPPs on practitioners' and policymakers' understanding of the research process or the value of research in decision-making, and whether they further disseminate and scale-up the innovations they codesign (Coburn & Penuel, 2016). Notably, the literature on RPPs inadequately addresses their ability to promote greater knowledge-use by practitioners and policymakers. Coburn and Penuel (2016) note that "there is mixed evidence about whether participation in partnerships is associated with increased use of this research for making decisions" (p. 50) and argue that "we need to better understand when and under what conditions RPPs foster research use and when they do not" (p. 51).

These gaps in the literature are even more pronounced when considering partnerships that focus on influencing educational policy rather than educational practice. These partnerships can exist at the district-level (e.g. the Houston Education Research Consortium), city-level (e.g. Education Research Alliance for New Orleans), or the state-level (e.g. Policy Analysis for California Education). Some of these partnerships assess and offer recommendations for a broad range of educational policies (e.g. Michigan Consortium for Educational Research), while others focus more narrowly on a particular policy issue (e.g. Massachusetts Consortium for Innovative Education Assessment). Studying these partnerships is complicated by the blurred distinction

between researchers and policymakers. While researchers and practitioners are more easily sorted into two distinct communities (see Farley-Ripple et al., 2018), foundations and intermediary organizations can be both the 'hubs' of an educational research and policymaking landscape, as well as 'spokes' that produce their own educational research and lobby for particular policies that they favor (Scott & Jabbar, 2014). Indeed, our own research partnership is supported by a Detroit-based foundation that also produces and disseminates its own research and is one of the primary stakeholders represented in a new quasi-governmental policymaking group organized by the Detroit mayor. The lack of research on the impact of such partnerships, as well as the extent to which their research is relevant to policymakers and the mechanisms through which it successfully influences research-use in policymaking, point to an opportunity for research that considers whether the principles of improvement science and RPPs can help advance the policy-relevance and use of research produced by those partnerships.

The Case of the Detroit Education Research Partnership

We explore the potential for improvement science and RPPs to maximize the policy-relevance of education research by reflectively examining the case of our own research partnership, the Detroit Education Research Partnership. The hub of our partnership is the Wayne State University College of Education (WSU) in Detroit, Michigan. The Detroit Public Schools Community District (DPSCD) became a formal research partner with WSU in 2017 and a citywide steering committee focused on reducing chronic absenteeism called Every School Day Counts Detroit joined the partnership in 2018. Although these institutions constitute the formal partners, the policymaking and advocacy audiences for our research also included grassroots community organizing group 482Forward; Detroit's branch of the Campaign for Grade Level Reading; and the public-private Community Education Commission (CEC) formed by Mayor

Duggan that brings together educational, non-profit, and business leaders from across the city, including the superintendent of DPSCD and a leader in Detroit's charter school community. The Michigan branch of the American Federation of Teachers, Michigan Department of Education, and the Skillman Foundation also have representatives on the board. The Skillman Foundation is one of the funders of our partnership and has played a significant role in education policymaking in Detroit for the last two decades. Most recently, the foundation was the organizing hub for the Coalition for the Future of Detroit Schoolchildren, which issued recommendations for city-wide school reform when Detroit Public Schools was near bankruptcy in 2015. One specific recommendation was for the creation of a commission similar to the CEC that would manage accountability, openings, and closures for all Detroit public schools (Lenhoff, Lewis, Pogodzinski, & Jones, 2019).

Unlike RPPs that are focused on specific problems of classroom- or school-level practice, our RPP might better be called a "research policy partnership." Although policy partnerships share many principles with RPPs, they differ in important ways. Rather than focus on one school or school system, the goal of research policy partnerships is to produce research that informs broad improvements across educational systems. Our partnership, for instance, is designed to inform citywide policy in order to improve educational conditions and, in turn, outcomes for Detroit students, with a specific focus on reducing chronic absenteeism and improving the quality and stability of city schools. That means that our research must be useful not only for the traditional public school district, but also for the more than 50,000 Detroit resident students who attend either public schools in other districts or charter schools in and outside the city limits.

We have organized our research policy partnership around a continuous improvement framework, borrowing key concepts and organizational routines from improvement science in

education. In order to "learn fast" about what to study and how best to communicate our findings to partners, we have focused our attention on high-leverage practices for improving our key outcome—the relevance of our research for policy decision-making in Detroit. This means, for instance, that although we recognize that politics shapes policymaking, the focus of our improvement work is not changing political loyalties in the Detroit education landscape. By developing organizational routines, like reflective memo-writing after meetings with external partners and plan-do-study-act (PDSA) cycles to determine and measure changes in our practice, we have begun implementing elements of improvement science to serve as a method for improving the policy relevance of research in complicated political landscapes.

Because there are not existing models for how to incorporate improvement science into the improvement of research partnership activities, we approached our work with some organizing principles and structures that allowed us to get feedback, learn, adapt, and hopefully improve over time: a) we consider the needs, priorities, and levers for change available to all of our policy-making partners when deciding what to study; b) how we communicate our research is shaped by the diversity of our partners and their potential use cases; c) we collect data from our partners to measure our success in providing research that can inform policy improvements; and d) we adapt our research, communication, and outreach practices based on the data we collect. Coming out of the first year of our RPP, we learned many lessons from the improvement science and partnership process we used. In the following sections, we share what we learned from our partners, how we approached adaptation, and our reflections on what this means for this approach in our context and in the broader field.

Reflections on Using Improvement Science and RPPs in Detroit

During the 2018-19 school year, we collected feedback from our partners to inform improvement in our research practices and to generate new knowledge on the efficacy of improvement science and research partnerships for informing policy. These data were generated through eleven semi-structured interviews with representatives from partner organizations, meeting minutes from 13 internal research meetings, online feedback surveys from 31 respondents, and reflective memos from nine meetings with key policymakers or influencers in Detroit, including the CEC, the Skillman Foundation, the Mayor's office, and several non-profit education groups. These data were used to helps us reflect on how we were fulfilling the goal of our partnership and whether the research we were producing was relevant to the policymakers who were closest to the problems we investigated. It allowed us to consider new ways of organizing our work and communicating with our partners. The following sections report on what we heard and how we responded to this feedback by adapting our research design and communication activities in subsequent studies.

Who are Our Partners and What Do They Need?

What We Heard

In Detroit, the Skillman-backed Coalition for the Future of Detroit Schoolchildren recently issued a report with sweeping recommendations for how Detroit educators, policymakers, and community members should be working together to improve education in the city. Focused on improving early literacy, school attendance, and systems coordination, the report created incentives for the creation and philanthropic support of several new or emerging education-focused organizations, including some of our partners. One partner told us that the early stage of these organizations was one reason why our work was important:

"Especially when you look at the newness of so many of the institutions that were being built. 313Reads, Every School Day Counts, not new, but still reforming in a new context, DPSCD, CEC, how can you be providing them and equipping them in a capacity that they need to be able to really understand and do an analysis of their work in the context of what's actually happening with Detroit kids? That's why I think it's so important and what our working theory was around it."

The same partner went on to describe the needs of one of these groups, the CEC:

"I think [...] it's being grounded in the reality, and so really making sure that they're using data and research to understand the context and the problems that they're trying to solve. I think us, that have been staring at these things, or working on these things for years, have an inherent understanding of some of the patterns that happen in the kids' lives and how they interact with the school district."

For this stakeholder, one essential need was for key policy partners to be brought into the community of stakeholders who had been working on educational problems in Detroit for years. These new actors, many of whom were in formal positions of power, did not always understand the history of Detroit educational reform or the context in which many Detroit students have attended school. Another partner echoed this concern, saying how important research was in filling knowledge gaps among key stakeholders who might be making policy decisions, such as members of the Mayor's staff or people involved in the CEC.

At the same time, our research policy partnership also needed to fill the role of more traditional research entities, such as answering questions that school districts do not have the capacity to answer. A school district leader told us that their team "can't address everything that we want to," so they see a benefit to "research partners who are aligned around helping us

address other areas of our strategic planning or our goals." Many of the partners we spoke to expressed the need for our work to answer many questions, across audiences and for different purposes. One community partner told us how they hoped our research could help shift the narrative around research and data in education, from punitive accountability measures to useful information:

> "When I think of, especially your research, it's like, it's informative to, like where it can be an indicator for so many things, and [..] people who are in schools currently, teachers, the union, like the principals, and like allowing people to see data not just as a punitive. Because I think that's like, that has been something harped into, not just to [...] our public education systems in general, in Michigan and across the country, of like, there's no real incentive to look at research with a lens of like, 'I'm not going to be fired. This doesn't define me.'

One of our partners told us that they heard someone in the Mayor's office say that our research "was changing the way that we're thinking." They went on to say, "To me, that's what success is looking like, is through this process, people are feeling of value, are changing the way that they're thinking, and are feeling more informed about what they're working on." A key lever aiding our ability to inform multiple audiences was our orientation toward improvement science. One partner mentioned this in their response to a question about how we will know we are successful:

> "Because you have to remember, in what you're doing, everyone's now thinking about ... You know? That's the whole continuous improvement part. I think you're being really successful. And I also think part of it is for you to reflect on, 'What value am I bringing? And what value could I bring after doing this?'"

These sentiments were also reflected in our feedback survey data, where 83% of respondents agreed with the statement "I learned a lot from this research." In addition, participants responded to the question "What new questions do you have about education in Detroit after learning about this research?" with questions about whether a common curriculum might help mitigate the impact of mobility and what interventions could help to end chronic absenteeism. One respondent said:

> "I would like to see more information about school culture, teacher tenure, academic climate, etc. I am interested in how behavior impacts absence and school mobility, particularly considering how that school responds/manages behavior issues. Similarly, in the world of positive youth development, we think in terms of risk factors and protective factors- is there a way to study the protective factors that might reduce rates of chronic absence and/or school exit? How does the existence of special needs/learning disabilities impact absences and student mobility?"

This type of feedback encouraged us to continue to give explicit attention to improving our practice as a research partner via the lens of our partners. Further, statements like these suggested an increasing alignment with our partners, in terms of valuing our research and the process we collectively used to produce, disseminate, and improve research.

How Feedback Shaped Adaptation

The feedback that our research should be useful for a broad array of stakeholders led us to consider how to shape our research topics and communication to reach audiences that are multi-dimensional, spanning school systems, municipal government, advocacy groups, and the community at large. While formal partnership with one or two key educational institutions was important to gain legitimacy in the policy landscape and identify the most pressing questions,

these institutions could not be the only audiences for our research. Policy change occurs over time and through the sometimes uncoordinated work of multiple actors, at different levels of the system (Baumgartner & Jones, 2010; Marsh & Wohlstetter, 2013). For instance, we began this stage of the RPP thinking of the CEC as the primary policy influencing body. However, the CEC itself represents multiple institutions (e.g., traditional public school system, charter schools, parents, philanthropy) and, therefore, its members have different needs. At the same time, the CEC is but one policy influencing organization. In the Detroit context, grassroots community groups are also very important in shaping the conditions for and promoting specific policy changes. Given the highly volatile political context, with Detroit Public Schools recently released from emergency management and the city just a few years out of municipal bankruptcy, local organizing groups are some of the most stable and consistent education-focused entities in the city.

Thus, rather than bidirectional (Farley-Ripple et al., 2018), we increasingly began to think about the ways in which our research policy partnership needed to be multidirectional. Multiple audiences, or partners, in our research required us to be disciplined in learning about the perspectives, areas of concerns, and levers for change that existed within our policy environment. Proactively engaging partners in determining a research agenda is a key principle of RPPs (Coburn, Penuel, & Geil, 2013), yet this process became both more essential and more challenging in a complex policy environment with changing centers of policy activity.

Feedback from our partners spurred us to reconsider how to communicate with the multiple audiences for our work and consider their different potential use cases. For instance, one of our initial research projects was a study of chronic absenteeism in Detroit schools. Our DPSCD partners wanted detailed information on barriers to attendance in particular

neighborhoods and schools and student subgroup data to help them refine their approach to reducing absenteeism. While we created research products that helped DPSCD leaders with their needs, we also created different ways of presenting our research findings for our CEC partners, who were interested in which neighborhoods had the most potential for a new public-charter bus loop. These partners did not initially see how chronic absenteeism research would be helpful to their goals. However, when we presented data that showed neighborhood characteristics with chronic absence rates and student exit rates side-by-side, they could see the connection between these issues. Months later, our CEC partners requested additional data on chronic absenteeism across the city, suggesting that we were successful in communicating our findings effectively to this audience. Based on this feedback, we have also adjusted our approach to research reporting, focusing on more frequent short policy briefs that will allow us to tailor reports for specific audiences without having to make every report useful for every stakeholder.

The Complexities of "Neutrality"

What We Heard

Although many partners acknowledged that no one can ever be truly objective or neutral, several told us that it was important that we represented a perspective that was perceived as unbiased on what research and data indicates are key policy problems and potential solutions in Detroit. For instance, one partner mentioned how some of the policymakers had already invested in pilots of potential policy reforms, so "these interventions that are actually tied more personally to them, [...] I mean can anyone look at data from a not, like, objective lens? But, especially when you want something. Especially when something was formed around an individual project." This stakeholder argued that having a research partner that was not invested in any particular policy outcome was beneficial in bringing more objective evidence to bear on policy

problems. Contrasting our approach to that of other research teams, this partner's comments reflected how the ways we "jointly negotiated" the research process contributed to a greater degree of trust in us and our work.

Similarly, another partner framed our work within the context of mistrust among many community members after years of State control of DPSCD and the proliferation of charter schools. They said,

> "You're also providing a neutral perspective for them to be able to interpret and share their individual perspectives. That creates almost like a mechanism in which I'm not having to prove my point to you, you know? [...] It's very much like, 'Hey, how can we all be looking at these patterns and then learning from that?'"

Another partner cited "neutrality" as one of the reasons why research was important in helping him, a school district leader, make policy decisions:

> "I think research in general provides new knowledge and insights around issues and opportunities. It looks at the impossible maybe to find out that it's impossible, and maybe to validate that it's impossible at this point. So it takes an objective look at the world and tries to understand it honestly."

For this leader, who had struggled to get others within his organization to care about the problems he saw in the system, research was essential for objectively describing the reality of educational conditions and outcomes, in order to gain support for necessary changes in policy and practice.

Yet, one partner raised the concern that the typical methods of communication researchers use to present research "neutrally" can often alienate the very audiences we were

trying to reach. Alluding to the racialized nature of cultural norms like "objectivity" (Jones & Okun, 2016), our partner said:

> "The way that I would actually reframe it, but it means a lot of work for you, is I think in the academic world, we have this sense that's kind of rooted in white supremacy, in all honesty, of like, 'This is how you present neutral information.' So, it's just, it's a different way of looking at it, but when you really think about it in a way of what culture sets and values am I just inherently bringing in to how I think this needs to be presented, and how I'm defining neutral, it really shifts a way that you free yourself up from being like, 'Oh, I don't have to have it presented this, this, and this way. I could be doing things this way and it doesn't mean that I'm swaying the data.' It doesn't have to be these black and white squares for it to be neutral. It's actually, if I'm working with community, that doesn't have a Ph.D., it's doing them a disservice by keeping it in this very coded language, in all honesty."

Another partner observed that our external presentations were focused on what we could learn: "I feel like it was, the presentation allowed for people to have multiple voices and multiple interpretations of that data, and creating a space just like rooted in learning, and really thinking different, and how can we think." She went on to tell us that we did a "good job" being "pretty neutral" in presenting the information and gathering feedback from community members. However, she considered ways in which that neutral positioning may have interfered with participants' engagement. She said:

> "Then I was thinking about it in a more instructional way. [...] You could have done even something, like giving people more choice of which topic is more interesting for you, and then start there. Maybe people in the room, let's start in chronic absence, let's do that."

This feedback on guarding against bias and the perception of bias, and how we might shape our presentations to better serve the needs of our various partners, led us to adapt our practice in several ways, described below.

How Feedback Shaped Adaptation

While we recognized that we had a particular perspective on our research and on the direction that we believed policymakers should be going, we also benefited from our partners' trust that the data and research we presented were accurate and reflective of the experiences of Detroit students. This trust emerged both out of our position as "neutral" researchers in the policy landscape and also out of our openness and explicit attention to the interests and goals of our partners.

The feedback that our understanding of neutrality may have narrowed our reach to certain audiences led to important reflections within our team. We discussed different ways of presenting data, different forums we might design to engage community members, and perhaps other "products" beyond traditional policy reports. At the same time, we recognized the tension that our partner mentioned—that doing this will mean "a lot of work." One way in which we may apply the principles of improvement science would be to use this feedback to develop common practices of engagement with different stakeholder groups, which would include codifying templates for outreach meetings, visual and oral presentations, and mechanisms to solicit feedback. Like the "standard work processes" that Bryk et al. (2015) promote, these could include guidance and presentation templates that we test out in different forums, refine over time, and eventually promote to standard practices that any member of our team would use when engaging certain audiences. The observations and recommendations from our partners helped us understand how our research would have more relevance if we did not think about it as "our"

research alone. While it needed to include some boundaries that sustained its research validity and objectivity in the minds of our partners, it also needed to be interpreted and therefore co-constructed with our partners.

Co-Creation of the Policy Narrative

What We Heard

All of the partners we spoke with emphasized the importance of co-creating the narrative about the policy implications of our research. While they agreed that we do have a role in framing how the main takeaways from our research are presented, they also wanted to ensure that community partners were deeply involved across the research cycle. For instance, one partner said, "I think it starts with real conversations between community partners and researchers before any research happens. Like, asking like, 'What do we want researched?'" The partners argued that the findings of our research were most powerful and potentially influential when combined with the narratives of community members, including students, parents, educators, and other community stakeholders in Detroit schools. One partner said, "When research and community experience can be really powerful is when they amplify, when research amplifies community experience." Not only was this co-creation important for community-based policy change, but it was also necessary in ethically supporting the social justice objectives of our partners. A school district leader framed the importance of improving the city's schools as connected to the community's long struggles for educational equality:

> "My goal is ultimately to get to the performance phase, where we're making an impact on
> students. I've been looking at this for a long time, I've been leveraging the knowledge of
> other folks. I know we have pervasive 40 percent poverty across the city, with a third of
> the resources and all the infrastructure requirements. I'm personally a person who came

from that space, in the city of Detroit in Black Bottom, so when I think about where I am, my belief in what's achievable or not, I see a city full of students, families like me, that have this unrealized potential. So the goal is to unleash that potential across the city."

Connecting our work to the history of Detroit's struggles for educational equality was important in helping us think about how to co-construct our findings with our partners. As we have engaged community members, there have been times when our data seemed to contradict what they have experienced in their own lives. These moments represented "joint work at boundaries" (Penuel et al., 2015, p. 184) that are important in analyzing the practices within research partnerships. They helped us reconsider how to interpret our findings, generate potential policy recommendations, and connect those findings to the varied experiences of our community, which we also considered as "data" in our research. As one partner said, "In my mind, your report, the end report was definitely going to come out with some recommendations," which would be informed by the feedback we have gathered from community partners, since "the interpretation that you're getting is also data."

Another important takeaway with implications for our improvement science orientation is the tradeoff between quickly reporting out research to get feedback and the time that it takes to prepare engaging presentations that solicit the most useful feedback or that generate the best ideas for improving policy from multiple partners. Other suggestions included a "mini guide" for how to interpret quantitative research results and other "data visualization" techniques to make our research more user-friendly.

How Feedback Shaped Adaptation

In reflecting on feedback that encouraged us to think about how we were co-constructing research interpretations with our partners, we began to implement small changes in our research

process. For instance, after completing our main analyses, but before releasing our latest public report, we presented our findings to two stakeholder groups – one representing parents and one representing non-profit partners. We used these presentations to share what we were learning and to solicit feedback on our hypotheses about the mechanisms driving the associations we found. We were also able to hear their interpretations of our research and its implications for their work. This helped us frame our final written report in a way that would be accessible to our partners and reflect their use cases, and it also helped us identify and explain alternative explanations for our findings that are worth further exploration, either in our future research projects or in projects initiated by our partners.

We are also in the process of implementing new methods of displaying geographic patterns that have emerged out of our research. We plan to measure policymakers' responses to the graphics and maps in our reports and public documents by generating different visual representations of the same concept and asking stakeholders to respond with their interpretations, takeaways, and questions through an online feedback survey and interviews. We will measure how changing geographic unit boundaries that are displayed or the units of analysis in our map keys influences how policymakers interpret, respond to, and act upon our research. In turn, we will use this information to make additional adaptations that we will continue to test, with the goal of developing a template for how best to present mapping data to policymakers for maximum policy relevance.

Assumptions about the Nature of Research

What We Heard

Farley-Ripple et al. (2018) note that the gap between practitioners and researchers can be a product of differing assumptions and perspectives about the nature and quality of research. Our

first year of research was built around a large-scale administrative data set from the state. Whereas these data enabled us to look at broad patterns and associations longitudinally and for entire student populations, its specificity was limited at the student-level to individual demographics and a geocode for their residential block. Our partners, however, did not have a good understanding of the data environment in the state, often assuming at first that our data had to have come from direct data collection from students and parents.

In the early stages of our research, our partners tended to ask questions or seek conclusions from the data that did not fit with the analyses we were able to conduct. An illustrative example comes from a CEC staff member's introductory email to us:

> I agree that the board is very interested in the topics proposed (mobility, absenteeism, and school choice exit). I think it would also be powerful to also incorporate student performance into the mix to strengthen the argument of why it's important that we address these issues. Some of that is obvious *but if we can call out the causal relationship*, I think that could be powerful.

A particular focus was the motivations of students and parents. One high-level administrator in the public school district, for example, said her main interest in our research was "the motivations for students' families to move [to suburban schools] or to stay." Likewise, another district leader was "looking at students leaving the city" and wanted to know "why are they making that choice?" These sentiments—wanting concrete evidence of "why" absenteeism, mobility, and exit were happening—were shared by many of our partners. From a continuous improvement perspective, we recognized the need to think carefully not only about how we should present our findings but also how we would frame them with an overview of our data and methods and their limitations and possibilities.

How Feedback Shaped Adaptation

Recognizing that our partners were inclined to take a casual leap when reading our research, we dedicated take extra time in public presentations and private meetings to explain where our data came from and what we could and could not learn from it. We sought to position research in this first year of our partnership as a strong starting point for future work that could incorporate surveys or interviews with parents, or even use experimental or quasi-experimental research design. This approach drew upon the RPP approach to research partnerships as long-term and open-ended commitments (Coburn & Penuel, 2016). In all of our periodic updates with partners, we set aside time to ask what else they would want to know; and we would discuss which parts we thought we could answer with our current data, and the kinds of data and methods we would need in order to answer the rest.

As we published our first major report and solicited feedback from our partners, we saw evidence that this open communication about data and methods was effective. As one CEC board member commented after the release of our first report, "I think the value of this report is it says, student mobility and chronic absenteeism are real, right? Like this is what's happening. So I think this can become a launchpad for other studies that start to get at the root cause and why." Indeed, not only had we built a shared understanding of the limits and possibilities of our first round of research, but we also began to develop a shared vision for future work together. A CEC staff member expressed excitement about "really digging in" next year "with focus groups and more qualitative research":

> … because people who are on the ground in these various spaces are living these realities day in and day out. And so it doesn't even have to just be talking to parents, but talking to

the people who work with parents, they're going to know some of the why as well. It can start to paint a broader picture around the data. That might also make it more actionable. Likewise, as we discussed variation in school chronic absenteeism rates with one member of the CEC board, he asked "How did that happen? Why and what's going on inside those [schools]?" He suggested that we needed "other studies that sort of dig deeper into that because that's where we can start to make cleaner policy decisions." In fact, this feedback led us to include new data collection through parent surveys and interviews in a subsequent grant application to continue the research partnership. Incorporating our partners' expressed interest in new data collection and research methods both strengthened our application for continued funding and demonstrated to our partners that we would genuinely respond to their needs and interests.

This gap between us and our partners, around the nature and quality of our research, could have jeopardized our ability to maximize the policy-relevance of our work. Using PDSA cycles to reflect on our work allowed us to directly address that gap, instead of continuing to conduct and publish research without information on how our partners were receiving it. As a result, we created more trust and stronger relationships with our partners, demonstrated a knowledge of the local context, and aligned our goals for future work—all of which are foundational for effective research partnerships (Connolly, 2019).

<div style="text-align:center">Discussion</div>

Research presented in traditional academic outlets (e.g., academic journals, conference presentations, etc.) often do not reach an audience in the position to shape and implement policy. When researchers do want to increase the relevance of their work to policymakers, there are few evidence-based approaches to doing so. Engaging in a disciplined approach to policy relevant research requires researchers to communicate differently depending on the audience, and it also

demands that they continue to use their research expertise to better understand how and why research informs policy. Our research partnership, grounded in the principles of improvement science, is an emerging model for developing pedagogical dispositions and strategies to improving the policy relevance of academic research in education and, in turn, shaping policy itself. We contribute to the research on continuous improvement and research partnerships, and we offer new insights into how frameworks from each of these areas can be helpful in improving the research process—from origination of research questions to dissemination of findings. We advance the field of policy-relevant research in education in three ways: a) we demonstrate how researchers can turn the tools of improvement science inward to improve their own research practices; b) we show how RPPs can facilitate the collection of feedback data useful in refining research practices; and c) we have established systems to test and evaluate the impact of our approach on policymaking in the future.

Partnerships meant to influence policy improvement are different than those focused on instructional improvement. They require a multidirectional arrangement that goes beyond one research partner and one practice partner and includes stakeholders who create and enact policy (i.e., superintendent, mayor, lawmakers), as well as those who advocate for policy change (i.e., community organizers, students, parents). This means that improvement work must be attentive to the outcome of creating research that is relevant across multiple audiences with different needs. With this in mind, process improvements might include practices for engaging diverse audiences in conversation around what research they need to make policy decisions, practices for identifying key policy stakeholders and communicating with them, practices for quickly producing accurate research, and practices for presenting findings in a way that policymakers can understand and act on.

As in most work in schools, research partnerships depend on building trust between partners and establishing the valued contribution of each partner, which then contributes to the "created value" within the partnership (Connolly, 2019). We set out to build alignment, trust, and local knowledge as a strong foundation with our partners. We were able to do that more effectively because of our use of improvement partnership principles (i.e., an iterative approach to research focus and design, intentionally requesting feedback from partners).

One final consideration is how to measure our key outcome—policy relevance. There is a clear tension between wanting policymakers to use research in making decisions and not wanting them to make decisions based on inaccurate or under-informed interpretations of research (Lubienski, 2018). Therefore, researchers must be thoughtful about how to define and measure their influence. We believe that research teams should aim to improve in the following ways: a) increase the number of people in positions of influence over policy who read our work, b) increase the interest of policymakers and community members in the key findings we identify in our research, and c) increase the number of new research questions generated by policymakers.

Our research partnership is but one example, and our ability to reflect on its strengths and weaknesses is limited by our own positions within it. Coburn and Penuel (2016) note that, although there are some exceptions (e.g. Cooper, 2007), the majority of work on the dynamics of research partnerships has been first-person accounts written by researchers in partnerships, not practitioners (e.g. Roderick, Easton, & Sebring, 2007). We fall into the same category. These insider accounts often describe strategies that partnerships use to organize their work and learn from each other. As such, they provide insight into the workings of RPPs that others can use to inform their own partnerships. However, they do not derive from systematic research design, data collection, and analysis. They also typically involve retrospective analyses, making them

subject to hindsight bias. Our research attempts to mitigate some of these concerns by intentionally collecting data in real-time and implementing changes in response to those data, but we acknowledge that this process is imperfect because of our positions as both partners and researchers.

This work is difficult, and it presses researchers to reconsider traditional ways of knowing and producing research evidence. We are still in the early phases of our work, so it is as yet unclear how our attempts to establish trust, respond to feedback, and adapt our research processes will bear out in terms of policy adoption and enactment. There may be mitigating factors that ultimately make these efforts ineffectual, or complicate their potential impact. Building trust with partners must be balanced with research integrity and accuracy. In highly politicized contexts, where ideologues often arm themselves with carefully selected data to support their prior positions, education researchers must develop processes to navigate these complex dynamics while not betraying their professional commitments. In addition, the structural barriers within institutions of higher education may continue to pose threats to this way of working. Although some leading researchers are pushing the field to recognize the value of partnerships in research (Gordon, 2019; Scott, 2019), the time and resources required to be a good partner are too often not valued in traditional metrics of academic success. More must be done to align researchers' professional incentives with the requirements of doing partnered research with relevance for policy.

Academic researchers have unprecedented potential to influence policy and make their work matter for improving educational experiences and outcomes. Research partnerships, grounded in the principles of improvement science, are one way academic researchers can get better at navigating the policy world and improve how they use their expertise to improve policy

in education. As more partnerships launch, researchers can take a disciplined approach to understanding their impact and adapting their practice to meet their goals. As evidence grows on how to do this work well, other research partnerships – and policy contexts – may benefit from the improved approaches to communication, dissemination, explanation of findings and limitations, and co-construction of implications that we have begun to develop.

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