State Education Agencies' Acquisition and Use of Research Knowledge for School Improvement

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Over the last two decades, federal and state laws and grant programs, such as state accountability polices, the No Child Left Behind Act, Race to the Top and Title I School Improvement Grants, have given state education agencies (SEAs) considerably more responsibilities for directing and guiding the improvement of low-performing schools. They have also increased the incentives and supports for SEAs and school districts to adopt research-based school improvement policies and practices. Title I or other sections of the Elementary and Secondary Education Act (ESEA) and initiatives like the What Works Clearinghouse requireor in other ways press SEAs to use research-based knowledge in their statewide systems of support for low-performing schools, technical assistance for districts, professional development for teachers, and school improvement programs (Barnes, Massell, & Rowan, 2007; Honig & Coburn, 2008; Massell, Barnes, Rowan, & Perrault, 2008). Policymakers have urged SEAs to engage with other external intermediary organizations to extend their strained capacity to provide improvement supports for schools and districts, and to help them collect and use research or other evidence (Redding & Wahlberg 2008; Rennie Center, 2004).

Although studies exist of districts' and schools' use of research (see for example, Farley-Ripple, 2008; Honig & Coburn, 2008; Coburn & Talbert, 2006), we know little about how SEAs search for, select and use research and other kinds of evidence in their school improvement strategies. While one might assume similarities in research use behaviors, both the organizational structures of SEAs and the population of intermediaries with which they interact are quite different than schools and districts, and the most recent in-depth study of SEAs was conducted over 17 years ago (Lusi, 1997).

The exploratory study from which this article is drawn is designed to fill that gap by examining whether and how SEA staff use research and other types of knowledge to improve low-performing schools, and how SEAs are organized to manage and use such knowledge. In this article, we examine primarily where SEA staff search for research related to school improvement, the types of knowledge that SEA staff seek out for their work, and how they integrate various kinds of information into their design and delivery of supports for low-performing schools.

Study Overview

Conceptual Framework

The conceptual framework underlying our study is drawn from several lines of research and theory, including knowledge utilization studies, organization literature, the literature on social capital and social networks, school improvement research, and policy and evaluation research. These literatures led us to focus on four major areas of potential influence in the process of knowledge search, incorporation and use: (1) the sources of knowledge (2) the types and forms of knowledge exchanged within and between SEAs and intermediary organizations; (3) SEAs' organizing structures, including knowledge networks for managing and using knowledge, and (4) the political, contextual and institutional factors.

Sources of knowledge. We focused on where SEA staff searched for knowledge, particularly the extent to which staff turned to internal sources within their own SEA for advice, or to external intermediary organizations. Studies in other settings have shown that educators typically seek out colleagues inside their organization for advice, particularly those who are organizationally or physically closest to them (e.g., Supovitz & Weinbaum, 2008). SEAs have been portrayed as highly fragmented, "siloed" organizations with little communication across

different units and programs (see below for more details on organizational structures). Thus we also considered the extent to which individuals sought information within or beyond their own offices, across divisions, or in regional area education agencies, a level of organization above the districts and below SEAs.

Research suggests that external organizations can be key conduits for research-based knowledge and for the effective translation of research-based knowledge into local practices. A variety of external organizations focused on the business of school improvement have grown considerably over the past several decades, providing information, training, materials and programs (Rowan, 2002). The federal government has targeted resources on helping SEAs develop a system of supports through a network of comprehensive assistance and other sponsored centers (Massell, Barnes, Rowan, & Perrault, 2008; Turnbull, White, Sinclair, Riley, & Pistorino, 2011). Other intermediary organizations have become involved in this enterprise, including professional membership associations, national or state-level research and provider organizations, and institutions of higher education, among others (Honig & Coburn, 2008; Rowan, 2002; Weiss, Murphy-Graham, & Birkeland, 2005). Here we consider whether and to whom SEA staff turn for information within this array of potential outside sources.

Finally, studies have shown that some sources of information or advice can be more prominent or influential than others in shaping policies or practices (see for example Miskel, & Song, 2004). We consider whether external organizations or SEA members were named by multiple respondents to determine whether they became important actors in the search for research and in its use in school improvement policies or practices.

Types of knowledge. We define *research-based knowledge* as findings that have been to varying degrees "collated, summarized and synthesized," then presented in ways that provide

empirical or theoretical insights or make them otherwise informative (Davies & Nutley 2008). Older knowledge utilization models assumed that simply transmitting such knowledge to policymakers or practitioners would be sufficient to create change. But new models show that research-based knowledge is not sufficient to meet the needs of professionals using it; "potential users need direct and practical help to adapt policies and programs to their particular situations" (Petersilia, 1987, cited in Weiss, Murphy-Graham, & Birkeland, 2005, p. 33). Integrating contextual, local, and practitioner knowledge with research knowledge is critical to developing "useable" knowledge to guide action (Cohen & Weiss, 1993; Honig & Coburn, 2008; Hood, 2002; Huberman, 1990; Lindblom, 1990; Lindblom & Cohen, 1979). Therefore consider SEAs use of *other evidence-based knowledge,* which we define as data, facts, and information relevant to the problem of school improvement, and *practitioner knowledge*, the information, beliefs, and understanding of context that practitioners acquire through experience.

Organizational structures. Lusi (1997) argued that non-hierarchical, or less segmented organizational structures could help build internal and external relationships among SEA actors, and produce more effective, adaptive organizations. She and many others argue that "flatter," more lateral collaborative organizational structures provide mechanisms for exchanging information across units or even across organizational boundaries thus bringing in more timely, varied, but relevant expertise and knowledge to bear on problems (Weick & Sutcliffe, 2001). These more lateral professional advice or knowledge networks for example, can promote wider access to resources, more policy coherence through shared knowledge or learning, and other social capital such as mutual trust and motivation to address problems of practice (see for example, Brown & Duguid, 1991; Bryk & Schneider, 2002; Coleman, 1988; 1990; Frank, Zhao, & Borman, 2004; Goddard, 2001; Wenger, McDermott, & Snyder, 2002). Here we consider (1)

more traditional, hierarchical work structures versus more lateral and collaborative research, practitioner or data networks; and (2) the size or breadth of these networks in terms of different kinds of expertise or shared knowledge within them.

Political, contextual and institutional factors. Finally, policy implementation studies show the strong effects that the policy context—the mandates and incentives requiring or encouraging action in a particular sphere, and the regulations that govern action—can have on shaping or constraining knowledge search and incorporation. In addition to consider these factors, we look at whether and how the level of SEA expertise, staffing or funding influences what research or other information is considered feasible, and useful (Massell, Barnes, Rowan, & Perrault 2008).

Study Sample and Methods

We included three SEAs in our study, selected from different regions of the country, and varying in size and organizational structure of the SEA, in the richness of their intermediary environments, and in their strategies for school improvement. For example, the number of SEA staff ranged from 250 to 500 across the three SEAs. Two of the SEAs had more hierarchical organizational structures while the structure in the third SEA was considerably flatter, with generally fewer staff per unit and thus, at least formally, not as many 'chains of command.' The states varied on the extent to which their accountability systems and school improvement strategies were focused primarily on schools versus school districts, on the provision of direct assistance versus more general capacity building support, and on the involvement of regional education offices in educational programming and technical assistance.

The data for this article were collected in 2010 and 2011 and include in-depth interviews with a purposive sample of high level SEA staff involved in school improvement and related

programs (accountability, special programs, teacher policy), and a web-based survey sent to all SEA school improvement staff and a representative sample of all other SEA professional staff. The analysis includes 49 interviews and over 300 completed surveys across the three states, as well as documents describing SEA school improvement policies and tools designed for district and school use. The overall response rates for the survey were 65% in State A, 72% in State B and 81% in State C.

Interviews explore the respondent's professional background and roles and responsibilities; the organizational structure and staffing of the agency; the state's strategy for improving low performing schools and the fiscal and political context for those strategies; the sources and types of knowledge used to develop, implement, and/or revise the state's improvement policies and programs for its lowest-performing schools and school districts; and the qualities of the respondent's knowledge networks.

The survey collected information from all SEA respondents on their: (1) length of service in the SEA; (2) use of different forms of knowledge in their work; and (3) organizational units inside and outside the SEA with whom the respondents interacted and from whom they sought information. Survey respondents who identified their work as related "in any way to improving low performing schools and school districts in your state" were also asked a series of questions about (1) the organizations and individuals with whom they interacted within three knowledge networks—research, other evidence/data, and practitioner—related specifically to programs and practices for low-performing schools and school districts; (2) the strength of these networks (as measured by frequency of communication and their influence on respondents' work); (3) the level of trust and collective efficacy within each of the networks ; and (4) other influences on their work.[1]

Major Findings

Types of Knowledge SEA Staff Used in Their Work

SEA staff used multiple types of information to inform their work, but staff from all three states relied most heavily on advice from their own colleagues, with 70 to 80% turning to their fellow staff members at least once or twice per week (see Table 1). This was followed by the use of data on schools in States A and B, where 60% reported using this type of information in their work. Only 40% reported doing so in State C, perhaps because they had relatively fewer employees devoted to the production or use of data reports.

Insert Table 1 here

Research (such as published original research, research syntheses or summaries, meta-analyses), or research-based guidance (such as books, best practice guides, protocols or other tools written for practitioners**)** was used by one-third to nearly one-half of the staff, although our interviews suggest that this kind of knowledge often played a catalyzing and important role in the design and delivery of services for low-performing schools and districts (see below). Staff reported using the results of program evaluations least often. The low percentages may be a result of a limited supply of program evaluations; one state's research director noted that the cost for them to conduct such studies could be prohibitive. About 10% of respondents, on average, reported that they "never" used the different types of information in their work.

Sources for Research-Based Knowledge

*Internal sources***.** Across the states, a majority of survey respondents (53% to 63%) agreed or strongly agreed that the best resources for information useful to their work came from *within* their agency. Even higher percentages of staff involved in the work of school improvement (74% to 80%) turned internally for research on programs and practices targeted at improving low-performing schools and school districts. Staff in the two states for which we have individual

names turned to a relatively large group of colleagues. The 121 school improvement staff in State B named a total of 98 different colleagues as a source of advice, while the 63 improvement staff in State C identified 72 colleagues.

Differences in the formal organizational structures of the three SEAs make precise comparisons of communication patterns across the states difficult. For example, State A has separate divisions for school improvement and curriculum and instruction, while these two functions are located in the same division in State B. In State C, school improvement and assessment and accountability are located in the same unit, while assessment and accountability are in their own division in State B, but are spread across two divisions in State A.

However, we can make inferences about the extent to which individuals seek out research related to the work of school improvement across the range of functional responsibilities and funding streams, such as special education, assessment, research, and school improvement. Using this approach, we found that the highest percentage of respondents turned to the offices directly responsible for school improvement and curriculum and instruction, and next most often to assessment and accountability (See Table 2.) For example, in State A, the offices of school improvement (21%), curriculum and instruction (18%), assessment (5%) and accountability (8%) comprised slightly more than half of the SEA staff that respondents turned to for research. This was a quite similar situation in States B and C, where 49% and 58% of all sources mentioned by respondents were in offices that served these similar functions.

Insert Table 2 here.

Research activities were housed in different locations across the three states, and had different levels of staffing, In State A, there was a discrete office for research, whereas in B it was located within assessment and accountability and in C it was in the Superintendent's office.

In State C, only a single person was dedicated to this work, whereas 10 individuals staffed the research office in State A. Despite these differences, these offices placed among the top four or five internal sources for research information named by school improvement staff.

Cross-office searches for research advice on school improvement extended to other divisions or program offices as well, most notably to special education units. These offices represented as much as 17% of all internal staff mentioned in State C, and 6% to 7% in State B and State A, respectively. Their relatively prominent role may be surprising to those who have long perceived special education as the most separate unit of an SEA because of its distinct responsibilities and funding.

Our evidence indicates that while many did rely on people inside their own offices for research advice, their search extended across multiple internal offices or divisions. This cross-office communication stands in contrast to the usual image of SEAs as isolated and "siloed" units, and is an indication that the searches were broad and tapped a wide pool of expertise.

Cross-office communication was attributed to multiple factors, including state and federal accountability demands, competition for federal grants, reduced SEA staffing, and an intellectual argument for organizing into cross-office teams. For example, in State C, special education staffs were included in a school improvement team that convened every other month with its partners in the NCLB comprehensive assistance centers (CACs) to develop their statewide system of support for low-performing schools. [2] Their inclusion here and in other work across the agency was perceived to be a significant shift in agency routines. A director of one special education office commented,

> Over time there might have been one or two people in the instruction office that actually wanted to collaborate with people in the special education office on some instructional

endeavor as a bulk-- as a mass of people, they didn't…. But now, it's someone representing special education has to be at the table….I attribute it to No Child Left Behind, AYP. A sub group, looking at accountability for that sub group. (State C, 1012)

Similarly, the federal Race to the Top program was an impetus for collaboration across the offices of State B, and was thought to have had lingering effects.

In State A, a new system of regional support set up to assist lower-performing school districts drew upon the services and expertise of a range of SEA offices, including special education and English Language Learners staff. Again, this was seen as a change in organizational practices:

> It does require a new way of working. And what I have found so helpful, is that the content offices and the specialty offices like special ed and ELL are finding that they've always been looking for a way to have their services spread out and used in all of the parts of the state, (State A: 0113)

Staff from both States B and C also attributed their cross-divisional efforts to declines in agency staffing, a problem that had made it more essential to collaborate to get tasks done. The smaller size enabled them to know one another better.

> I think that when we had more folks there, you were not really kind of sure who to go to. And then we got smaller, we just had to rely on us to get things done. And I think that a lot of that is attributed to [our superintendent], who … restructured the agency a few years ago and combined some groups. (State C: 1034)

Finally, cross-office communication was also spurred by a very intentional effort to create teams to share information or work on common tasks and problems. State A reviewed the literature on "communities of practice" to help conceptualize and design delivery systems that

would convene groups on a regular basis to share and discuss problems, experiences, ways of addressing issues, and other kinds of informational resources. External partners often played a role in facilitating cross-office or even cross-agency teams. State B had held regular, formal meetings between various SEA staff and their service delivery partners for four years or more, a routine facilitated in part by a staff member of their regional CAC and a professional membership association. The Center on Innovation and Improvement (CII), a national CAC, hosted the Academy of Pacesetting States to convene state teams on a regular basis to discuss statewide systems of support for low-performing schools. Both States B and C were active participants in this work.

Staff perceived that these cross-office communications and collaborations led to productive exchanges of research and other types of information. One individual commented:

> What helps us is the regular communication that we have and through email, through meetings, these same people come to the [area education agency meetings for low-performing schools], they also go to school improvement facilitators network, which is a PD thing for us as school improvement people. So we get professional development there, we can network there and talk there. So I think that those conversations and sharing of research… has really helped. (State B: 1005)

*External sources***.** While SEA staff most often turned to their own colleagues for advice, between 27% and 30% of all SEA respondents felt that the best resources for information useful in their work could be found outside of their agencies. Similarly, between one-quarter to one-third of the SEA staff involved in school improvement turned to external groups or organizations for research (24% in State A, 31% in State B and 33% in State C).

Our interviews with SEA school improvement staff indicated that these external intermediaries played a more significant role in conceptualizing and developing policies and strategies than these percentages alone would suggest. The knowledge gained from these intermediaries was used to calibrate the steps SEAs were taking in the often uncertain work of improving low-performing schools and districts. External organizations also were important when the SEAs did not have the kind of expertise, or the staff capacity, they needed. These intermediaries helped translate, synthesize and package research for policy and practice by directly providing research-based tools or resources, or by acting as partners to co-construct and develop or even deliver a range of supports.

The SEA school improvement staff who cited an external source of research knowledge named a large number of distinct[3] organizations or individuals: 35 in State A, 44 in State B, 43 in State C. These numbers indicate that the research advice networks, on the whole, brought a wide range of expertise and perspectives to bear on SEA work, a situation our framing literature suggests can lead to more adaptive, flexible, and higher capacity organizations. These organizations were located in different sectors of the environment, but government agencies or government-sponsored centers comprised the most significant share. In States B and C, professional membership associations were also a major source of research. Most of these were occupationally-related membership organizations, such as the National Association of Secondary School Principals, specific subject-matter associations, or groups focused on general educational improvement, such as ASCD.

While the states turned to some of the same organizations for research advice, each had their own constellation of specific intermediaries. These differences reflect prior partnership histories, access to state intermediaries, the stage and focus of SEA school improvement work,

and SEA staff expertise. For instance, regional area education agencies and their respective membership association have long partnered with the SEA in State B in delivering services to schools. These regional government agencies pioneered strategies for improvement that State B later adopted as part of its statewide systems of support, such as a design for working with low-performing schools to model an improvement process. By contrast, State C did not have an equivalent set of regional government partners. Instead, they had long worked with a state-level professional membership association in school improvement design and delivery.

SEA staff turned to a different mix of organizations in the large government sector. For example, State A turned more frequently to different Institute for Education Sciences-sponsored regional education labs (RELs) for research advice, while staff in States B and C turned more often to the regional and content centers within the CAC network. The latter comprised about one-half to two-thirds of the government research sources named in States B and C, compared to only 4% in State A.

Why did a relatively larger number of staff name the CAC network in two of the states, but not the third? The answer may at least partially lie in the fact that their systems of support were more in flux in States B and C than in A, where the basic components of the support design had been in place for many years and was not under major review. As a result, State A was more likely to pull in external intermediaries on an as-needed basis, to request very discrete and specific tools and resources, while the other two states were considering more significant changes. State C was bracing for more and more schools to come within its purview for not meeting state accreditation standards (which contained higher graduation requirements) or federal NCLB standards, in the midst of a very spare and declining SEA workforce. They turned to their CACs to help them redesign their supports and create a research-based infrastructure of

tools to monitor and assist schools in a less expensive way, to identify students at-risk of not graduating, and to develop a more district-based approach to intervention.

And in 2010 State B requested help from the CACs to design a request-for-proposal to evaluate the impact of its established statewide system of support on school processes and outcomes. They also asked their regional CAC to help them facilitate meetings across delivery system partners, conduct surveys of principals in targeted schools, create a handbook describing their system of support, and engage with the CII's Academy of Pacesetting States, the National High School Center, as well as other national CACs.

Such external groups had expertise, or access to expertise, that the SEAs simply lacked. For instance, both States B and C had very limited capacity for high school improvement and guidance, due in part to staffing cuts. State C reached out to the National High School Center and a provider organization, Mass Insight, to help them develop tools to assess whether middle and high school students were at risk of dropping out. State B had struggled for many years without any expertise in that area as well, despite a gubernatorial initiative focused on high schools. State C relied heavily on its commercial vendors for psychometric expertise, because it did not have in-house staff with those abilities. And, one director noted that working with external organizations had given them access to individuals with the kind of expertise and skills that they were not able to afford themselves.

In addition to filling these gaps, some external sources were valued as more neutral purveyors of knowledge than the SEA, an asset if targeted schools were wary of the state reform agenda. Similarly, the expertise carried by external organizations or individuals could provide an outsiders' perspective on whether state efforts were within the bounds of best practice—an important metric for state agencies and policymakers who are engaged in often uncertain work.

A staff member from State C discussed turning to several outside sources to validate the steps they were taking to build a new teacher evaluation system that incorporated measures of student achievement, an effort that began with a long-time contact:

> [Professor Z] was very influential when [our teacher standards document] was developed ten years ago. We know he's done work for the other regional centers across the country. He's working in China, he's an international expert…. We had a vision when we started, but he's helped validate that for us and tell us that it is in line with what others are doing. And by the same token, we work with ETS, the Educational Testing Service. They certainly have a research arm, and they've validated what we've done (State C: 1008).

Another similarly commented,

> I'm optimistic about this community of practice work as we are able to talk more critically-- have an opportunity to talk with these other states and what they're doing and how they're going about doing it. Because if we go into the value-added work…what are other ramifications of that? You don't want to go blindly down one path and find it blows up in your face (State C: 1011).

This and many other examples illustrate the point that states must often push beyond the bounds of research to respond to mandates or conceptions of "good ideas," and look to other external practitioners to help them gauge whether they are on an appropriate path of action. But these examples often needed to be from similar settings. "You can't compare us to a state like Delaware...you can fit their entire administration around my desk. They don't have any diversity…we've got to put it through the lens of what's going to work in [our state.]" (State C: 1008).

Finally, external intermediaries frequently played an important role in synthesizing and packaging research to make it useable, and useful, to SEA work. As an administrator in State A explained:

> Because our work [in my office] is so huge, I've relied on consultants and organizations that can capture and summarize… research so that we can figure out, focus on how we're going to use it to inform our work. Sometimes I get that help in the form of a piece of research or book, but that's rarer. It's usually a conversation and sometimes it's a – or that model or an example or a consultant that has had experience with this work…We've also learned a lot from companies that have strong experience and knowledge of the research like Indistar, Sam Redding's firm, and Cambridge Education (State A: 0109).

Singularity and Centrality in the Research Network

Singularity. While state staff involved in school improvement turned to a large number of sources inside and outside their agencies for research information, many of the connections within them were unique to individuals—that is, these sources were frequently identified by just one person. This singularity of connection was particularly true in terms of staff outreach to external individuals or organizations. Approximately one-half of the external intermediaries were selected by a single staff member (49% in B, 55% in C and 56% in A). Internally, 13% of the SEA staff sought out for research advice were mentioned by just one person in States B and C Adding in those named twice accounts for a quarter to one-third of the mentions in these two states.

This pattern of singular connections has several explanations. In some cases, staff turned to individuals with whom they had prior, personal experience, such as a former graduate faculty advisor or friend. One person could serve as the primary liaison between the SEA and the

outside group. Some of the intermediaries played a more significant role in agency work in an earlier period. And, finally, communication could be quite specific to the task for which the research was pursued, and for which one SEA staff member bears responsibility.

But our survey results also indicate that a few external organizations and SEA colleagues were identified by many more respondents than others in their respective external or internal groups, and were prominent or influential "nodes" in the network. For example, one intermediary represented nearly one-quarter of the outside research mentions named by respondents in State C. A small number of staff within the SEAs was also frequently pursued for research advice related to improvement. In State B, 11 staff members (11% of named sources) received nearly half of all mentions; these individuals were named between 9 and 24 times each. Similarly, in State C, 6 employees (8% of named sources) were named between 9 and 30 times, representing more than one third of all mentions. In both states, the directors of school improvement were at the top of this list.[4] For example, one person noted that he always turns to their director of school improvement for research because she

> is such cutting edge that she's always looking for you know, what will help individual kids in schools, individual schools... She was at a conference and Sam Redding, the director of the CII, was talking. He finished talking, and she chased him down the hall and said, "This is what we need. This is what I'd like to have (State C, 1009).

Indeed, majorities of these sources were senior administrators in their respective SEAs, and were viewed as having critical knowledge or access to expertise. They also had authority and, as senior administrators, often a broader perspective on how research could be fit to the needs or circumstances of their organization.

Translating Research Knowledge into Varying State Contexts

We anticipated that the stage and design of states' school improvement strategies would impact the type of information that SEA staff found relevant and useful. We reviewed state documents and asked SEA staff to describe key elements of their school improvement strategies, how these strategies were designed, implemented and/or revised, and the decision-making processes they used, including who was involved and the types and sources of information they turned to and why. Using these questions, we situated the search for and use of research and other kinds of knowledge in the context of problems of policy and/or practice.

The three states varied in their approach to school improvement and in their strategies for delivering services. For example, many years ago the legislature in State A required that they focus on districts as the locus of improvement, and the state has maintained that approach. While State B also once focused on the district, several years ago they decided they would gain more traction by providing improvement supports directly to the schools not making adequate yearly progress. By contrast, State C began with a focus on the schools, but anticipated growth in the numbers not meeting state or federal accountability standards led them to shift to a district-level intervention approach. These and other distinctions produced somewhat different sets of policy and practice challenges.

But while some of the problems that SEA staff addressed were unique, many others were similar. For example, all three wrestled with how to guide schools and districts to identify and concentrate on key areas of need to make gains, balance and blend state oversight with state support, provide an appropriate level of service (intensity of support), develop leadership, use data effectively, integrate new federal School Improvement Grant requirements into their system for improvement, and more. To illustrate how these states engaged with research, we recount

their common efforts to design and/or refine the overall frameworks underlying their school improvement plans and strategies.

State A. A set of district and school standards and indicators form the core of State A's approach to district and school accountability, planning and assistance. These standards and indicators are designed to guide the actions taken by schools, districts and the SEA at all levels of the accountability and assistance system through district reviews, district and school improvement plans, school improvement tools and other forms of technical assistance. The district standards and accountability system date from the late 1990s.In 2008, the SEA undertook a review of the standards in an effort to make them more manageable, coherent and useful, and to update the underlying research. State staff pulled from a variety of sources for this review, including extant research; stakeholder groups; and working groups tasked with developing a new teacher evaluation system (for research-based human resources and professional development indicators) and with developing a framework for supporting children with behavioral health needs (for research-based student support indicators). They asked their Regional Education Lab to identify the research underlying the indicators and their impact on schools. The SEA then compiled this research into a guide and posted it on its website.

> We've used research [for the District and School Standards] explicitly because we want to be transparent about it so that it can guide, so that people understand they're being held accountable to things that research tells us are important. But also so that the assistance can be, that we can tie the assistance around some of what research is telling us as well (State A, 0101).

State B. In State B, the impetus to create a new school-level improvement framework in 2006 was driven by the perceived inability of districts to produce meaningful plans to address

Title I schools not making progress. "We were getting nothing. I mean, it was just awful stuff. And then we would go back and we'd say, 'Let's see what you've done?' And they would have done nothing. They may or may not have spent the money" (State B: 1003). SEA staff engaged school improvement specialists and other educators to develop the framework and companion planning documents, and drew upon the literature reviews and information acquired from two other state initiatives on effective schools and student achievement. In contrast to State A, their challenging experience with districts led them to use the research to expand attention and focus on supports targeting school level leaders—principals, assistant principals and teacher leaders.

By the time of our visit in 2011, State B's framework was widely viewed as the touchstone to which all other strategies and tools should relate; staff perceived the framework to be held in high regard, and therefore not itself a document to be revised even when other aspects of the system were undergoing review. Staff attributed its status to the quality of the research, which has not been changed since the framework was originally published. For example, one SEA official described using the framework to develop an improvement process that schools would engage in with an external provider team:

> We made sure we took each of the five strands [of the SI framework]. And if you think of what this big picture is, how can we use the research from these five strands to do that? So that was the whole basis of [our new component of support]…. But I think the fact that we based it so solidly on research in the first place, I think that really helped as we went along that it didn't ever need anything major to change (State B:1005).

State C. This state similarly found that improvement plans being submitted to them were scattered and poorly conceived, and lacked a solid theory of action. The CII's *Handbook on Restructuring and Substantial School Improvement* seemed to present a ready solution to this

problem. The handbook contains chapters on district and school restructuring with research cited for actionable processes and guidance about what to do or not to do with improvement plans (Hassel et al., 2006). At the end of the handbook is a module with a consolidated checklist of indicators for schools, districts and teachers to use to identify areas for improvement, a research-based guide to action that they found readily usable, and useful.

> With the Center tool, there are indicators and… the [Handbook on Restructuring and] Substantial School Improvement, that's what we based everything on. I read that book, I loved it and I called and said, "This is what I want in [our state]. I've got to have this kind of support (State C: 1006).

The SEA, however, took a proactive stance with CII to help them transform these materials into what SEA staff considered to be a more focused and useful format. Working with their own school improvement coaches (who are retired educators), CII staff, and their regional CAC, State C created a more streamlined set of indicators, cutting the number from the Handbook by half. They also collaborated with CII to develop a technology-based platform, Indistar, to make the SEA's monitoring process more feasible and affordable as well as intensive.

These examples show that SEA staff gravitated to research that was actionable, feasible, and addressed the problems that they saw arising from their current policies and practices. These problems and policies, as well as funding, guided where they identified research solutions. As one respondent explained,

> When I think about information, or theories, or whatever that are presented in the group…[I]think about a Venn diagram. You know, that place in the middle where theory of practice meets practical implementation questions. Where is that place in the middle

where a-- what appears to be a good practice in thought, actually works at the ground level or at the school, or at the [district] (State C: 1017).

Creating Useable Knowledge

The findings of formal research studies rarely offer direct, definitive and sufficiently specific guidance about how to modify or institute new policy or practice to achieve desired outcomes. And, as noted earlier, the literature on knowledge utilization suggests that integrating contextual, local, and/or practitioner advice with research is critical to developing "useable knowledge." Our three states were no exception to these findings. Survey respondents from across these SEAs indicated that they used data and two sources of professional knowledge—their own colleagues and practitioners with similar responsibilities outside their SEA—to inform their work, at least as often or even more frequently than research (see Table 1). They sought out practitioner advice to develop strategies or tools, adjust research-based guidance into their own particular settings, or use "feedback loops" to modify policies and practices as they were implemented in the state.

For example, SEA school improvement staff in States A and B routinely sought input from educators in their own local districts or regional area education agencies to collaboratively design their tools and other initiatives. State A developed several web-based school improvement tools in collaboration with external intermediaries, a network of urban superintendents, and SEA liaisons with urban school districts. The SEA also created new regional assistance centers to support a broader range of districts in the state, drawing in part on experience from the urban districts and superintendents' networks. They also engaged the CAC, a local educational consulting group, and practitioners in the design of this system. Involving educators in both the design and the staffing of these regional centers was seen as critical in

gaining credibility and in fitting the work to the needs and problems of the field. Each member of a regional team—the regional assistance director, and the math, literacy and data specialists—is also supported by an external partner who provides "new research and ideas" through professional development to each job type.

State B also designed some of its supports for schools in partnerships with local practitioners. For example, they worked with school improvement facilitators from regional area education agencies to design a new process to engage schools in a cycle of improvement. They began with the research-based school improvement framework, but brought in the facilitators for their on-the-ground, intimate knowledge of low-performing schools, and then solicited input from ESEA program specialists.

In another example, the state hosted a focus group meeting with principals from low-performing schools to get their feedback on the improvement supports. This formative feedback session led the state to give schools and their support partners greater authority to select assistance based on a more context-specific evaluation of their needs, and away from a more uniform set of supports based on the period of time the school was under sanction. Research had informed all of these strategies. But other kinds of evidence, especially, practitioner knowledge and feedback, were important in fine-tuning and translating the research into usable knowledge that addressed the changing problems of changing.

Summary and Conclusion

Our evidence and analysis shows how SEA staff across these three states became active seekers of research and other types of evidence to inform their work, and how their searches contributed to conceptual or instrumental use of this knowledge for school improvement (see also, Barnes, Weinbaum & Francis, 2012; Fink & Weinbaum, 2012). At the same time, SEA

staffs were cognizant of the limits of research as a guide to action. They recognized that the research base alone could be too limited to support their responses to federal and state mandates, or insufficient to meet emerging problems of implemented improvement practices.

SEA staff relied heavily on their colleagues across a range of offices for research, a communication and work arrangement that defies traditional images of the SEA as a bureaucracy with isolated units. These and other more lateral, collaborative structures seem to have been compelled by a variety of factors, including state and federal accountability programs, efforts to respond to federal grant initiatives such as Race to the Top, the need to work more collaboratively because of staffing shortages, guidance and support for cross-agency teams from facilitating external partners, or internal SEA management strategies. Better understanding of how these more lateral advice or knowledge network structure emerge and persist, as well as how they relate to more formal hierarchical organizational structures, may help SEA leaders improve the exchange and use of research-based knowledge. As our framing literature suggests, if broader communication structures develop a more widely shared understanding of the work and the research behind it, they may also help produce a more coherent and integrated set of policies.

Our evidence also shows that although SEAs' research networks included proportionally fewer external organizations, some were critical in supporting the use of research-based knowledge in school improvement policies or practices. They provided expertise and human capital in areas where SEAs were lacking, and access to ready-made or adaptable tools. These intermediaries brought in fresh perspectives or validated that SEA actions were in step with research or the initiatives of other states. And when external players were integrated into the SEAs delivery of supports, they provided on-the-ground perspectives to develop new strategies

or adapt existing ones to emerging problems and specific contexts. Other external intermediaries developed new relationships and fostered sustained interaction among sets of individuals from across departments within the SEA, or with external experts, to create communities of practice. These high quality relationships can nurture capacity building social capital, such as a shared understanding, mutual trust, and collective motivation to take action. These communities of practice became venues where research as well as practitioner knowledge could be brought to bear on problems in a timely manner.

A related finding shows that while many external organizations and internal sources of knowledge tended to be named by just one individual, a subset of individuals or organizations (including many of those externals described just above) were identified by numerous SEA members. These last were thus more influential, not only in the dissemination of research, but also in understanding how to tailor its use in different contexts to fit state needs. Internally, these influential people tended to be office or division heads and mid-level managers with strong network ties to many sources of internal or external expertise. Through their interactions, they gained a broad perspective on particular problems and areas of expertise. And because many people turned to them for research advice, they had the potential to develop a common understanding of improvement strategies across the agency.

An important implication of our study is that agency leaders and school improvement policymakers would be wise to understand not only who the influential actors within an SEA are, but also how to develop more of them. Doing so would help keep the organization innovative and up to date on rapidly changing research findings, and help integrate other kinds of knowledge and expertise to make the research more usable for their own settings. But it is also important to identify the more isolated members of SEA organizations to determine whether

their knowledge and expertise might enhance program or policy development if it was included in the network exchange. Potential innovation or crucial information could be prevalent in some SEAS, but isolated and thus not yet activated for productive use.

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Appendix A

Table 1: "How often do you use the following to inform your work?"

Percent of all SEA respondents answering "Once or Twice a Week" or "Daily or Almost Daily"

	State A	**State B**	**State C**
Research (e.g., published original research, research syntheses or summaries, meta-analyses)	35%	45%	32%
Program evaluation (e.g., published or unpublished evaluations of programs or policies)	19%	32%	20%
Research-based guidance (e.g. books, best practice guides, protocols or other tools written for practitioners)	33%	47%	35%
Data on schools in your state (e.g., student outcome data, administrative data such as the distribution of highly qualified teachers, etc.)	60%	53%	42%
Advice from colleagues within the SEA	82%	76%	70%
Advice from practitioners outside of the SEA who have knowledge of how your programs work within your state or in other states	38%	40%	31%

Table 2: Highest Ranking Sources of Research within SEAs (by Division)

Percent of Total SEA Mentions in the Research Network*

State A		State B		State C	
School Improvement (includes Elementary and Secondary Education Act (**ESEA**) programs	21%	**School Improvement** (includes **Curriculum & Instruction**)	34%	**School Improvement** (includes **Assessment**)	32%
Curriculum & Instruction	18%	**Superintendent's Office** (includes School Redesign, Academic Programs)	14%	**Curriculum & Instruction** (includes **ESEA**)	26%
Accountability	8%	**Assessment & Accountability** (includes Research)	15%		
Assessment	5%	**ESEA**	13%		
Research	9%			**Superintendent's Office** (includes Research)	6%
Special Education	7%	**Special Education**	6%	**Special Education**	17%

Columns do not add to 100% because we include only office functions with the highest mentions 5% or above).

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[1] In State A, we were unable to collect the names of individuals from whom the respondents sought advice and information in these three networks, the level of trust and collective efficacy within each of the networks, and other influences on respondents' work.

[2] The CAC network set up by the Technical Assistance Act of 2002 created 16 regional assistance centers dedicated to one or more states, and 5 specialized content centers. The content centers were supposed to identify and help regional centers and states identify and use high quality research in particular areas, such as high school reform, improvement and innovation, and assessment. These CACs became operational in late 2005.

[3] By distinct sources, we mean those that were specifically identified, not general types. For example, if someone said "publications" or "institutions of higher education" we did not count that a distinct source in this calculation.

[4] Survey respondents were asked to report on a scale how frequently they interacted with the individuals they named as a source of advice. When this measure was combined with a survey rating of influence, other individual staff members could emerge as "stronger" links in the network. We will be publishing those results at a future date.