Title
Towards Broadening Our Understanding of Education "Research" and its "Use": How Three Collaborations Between Research and Practice Support Evidence-Informed Policy

Section
Use of Research Evidence Across Settings

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Panel Justification
Over the last two decades, education research and policy in the U.S. under the "What Works" agenda has generally been guided by both a narrow definition of "research" and research use (Tseng and Coburn, 2019). Increasingly, research on research use suggests broader characterizations of both are necessary if we are to fully understand when and how to support evidence-based practice. For example, to capture the role of *evidence* (of which *research* may constitute one part) in educational improvement efforts, a broader definition of research that goes beyond RCTs alone is essential (e.g., Cowen, et al., 2017; Rousseau and Gunia, 2016; Clay, 2010). Moreover, the simple linear model of (instrumental) research use, where the user accesses, reads, and then applies research directly to a decision, generally fails to capture the "messy" reality of use, where users are situated inside complex social and political systems that mediate and shape whether and how use occurs (e.g., Honig and Coburn, 2007; Farley-Ripple, 2012).

These emerging findings suggest there are important new questions to consider regarding how to support evidence-based practice, but perhaps especially so for those who find themselves working in collaborative endeavors formed around this goal. In this panel session, we'll explore challenges related to this shift in knowledge by grounding our conversation in three examples of collaborative research currently being conducted with a variety of practice-side stakeholders. In

all three cases, the collaborations among researchers and education leaders ultimately aim to inform policy and practice through evidence that is based in a variety of rigorous research methods that align with their intended uses of the evidence. Our session moderator, a researcher currently working inside a school district setting, will provide critical perspectives on the "user" dimension throughout the discussion.

After having each panelist introduce their studies and approaches to supporting research use, the moderator will invite the panelists to provide reflections on the following questions:

First, what should "count" as "evidence"? How might what "counts" as evidence differ for researchers and practitioners? How does this connect to its intended use or impact? If evidence takes on a broader meaning, how does the role of the researcher in collaborative research endeavors change?

Second, considering the numerous ways evidence might be used (i.e., instrumental, conceptual, symbolic, etc.), which of these should guide our expectations for research use? Why? Should collaborative research endeavors that share similarities in structures, such as research-practice partnerships (RPPs), adopt the same framework to understand and assess use?

Third, how should we think about the *quality* of research use in these contexts, rather than focusing on "use" writ large, as has been recently suggested by Rickinson (2019)? Are there any efforts currently underway among the panelists that go beyond tracking simple instances of research use and instead, add an element of "quality"?

Through a rich, moderated discussion between the panelists and audience members, we hope to further expand our understanding of how evidence development and evidence use might be better supported in education practice.

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Informing Standards-Based Science Instruction Across States: The Council of State Science Supervisors (CSSS) Professional Association

Title: Using evidence to advance standards-based science instruction across states

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Abstract: The Council of State Science Supervisors (CSSS, known as "CS cubed") is a nationwide professional association for state science leaders. CSSS connects current and former state science leaders with select researchers in a unique learning community focused on advancing science education policy and practice at the local, state, and national levels, with special attention to implementation of the evidence-based Next Generation Science Standards (NGSS), outlined in the *Framework for K-12 Science Education*.

Professional associations such as these are one leading source through which education leaders report accessing research (Penuel et al., 2016). Because of the unique, evidence-centered design and impact of this association, this descriptive study aims to share how CSSS members report using research evidence, especially through interaction among education leaders and researchers. To do so, at the 2016 and 2017 CSSS annual conferences, we administered a survey that asked members about the roles they play in the association, the activities in which they participate, how they use research evidence, and to whom they turn for research to inform their decision making.

We focus here on the results from the Year 2 (2017) survey that represented a more diverse sample (n = 58) across 36 states, including three groups of CSSS members: *state members* (n = 40), who work for their state Department of Education and oversee science education; *associate and honorary members* (n = 11), who are former state members still involved in the organization; and *affiliate members* (n = 7), who are researchers and others particularly interested in the work of CSSS. A lower response rate in Year 2 (41% versus 62% in Year 1) reflected a larger recruitment pool as well as turnover in CSSS membership.

CSSS members reported being actively involved in decision making related to science standards, assessment, and professional development at the state level and beyond. They claimed their participation in CSSS to this end often included consulting with other CSSS members, accessing information from the CSSS listserv, participating in CSSS-sponsored webinars, serving as conference presenters or participants, and collaborating with other states. A majority of respondents said they would look for research to inform a problem or decision at hand. Few, however, said they would seek research directly from researchers (especially those they did not already know) or from resources such as the National Science Education Leadership Association (NSELA) or the What Works Clearinghouse (WWC). Instead, many indicated obtaining research through CSSS or colleagues in their state departments of education.

The survey further asked CSSS members to name specific individuals to whom they have turned for research. Here, repeated mentions of the same individuals indicated that associate, honorary, and affiliate members of CSSS, as well as known university researchers not affiliated with CSSS, served as prominent sources of research related to curriculum, instruction, assessment, and professional development. Moreover, social network analysis of these items suggested that some individuals acted as *brokers* who facilitated the exchange of research, either within the professional association or between CSSS members and researchers unaffiliated with the association. Participation in structured CSSS activities, particularly substantive meetings as compared to planning meetings or more informal interactions such as webinars, were important sites for facilitating the exchange of research among CSSS members.

The survey further asked respondents to name a specific piece of research they found useful for informing their state's decisions related to implementation of the *Framework*, as well as a piece of research they had shared with district or school leaders. (Here and throughout the survey, we included a definition of "research" as: "an activity in which people employ systematic, empirical methods to answer a specific question. In this sense, research is different than the practice of looking at data from the district, school, or classroom, which is more open-ended and seldom addresses specific research questions.") This item mimicked an item on a survey of a nationally representative sample of school and district leaders conducted by the National Center for Research in Policy and Practice (NCRPP; National Center for Research in Policy and Practice, 2016).

The sources of research reported by CSSS members primarily included research reports or policy briefs, particularly those published by the National Academies of Science, Engineering, and Medicine, as well as peer-reviewed journal articles, and most often focused on student learning and classroom assessment. The research they shared with local leaders most often focused on classroom assessment and pedagogical practices. In contrast, the sources of research named by NCRPP's nationally representative sample most often comprised books that offered general frameworks, followed by research reports or policy briefs, and most often focused on pedagogical practices.

The CSSS survey additionally asked respondents why they found the particular pieces of research they named trustworthy. The most often cited reasons were because the research findings applied to their state context, or because the research gave them new ideas to support implementation of the *Framework*. A less commonly cited reason was that the research methods were rigorous.

In both surveys, respondents frequently reported using these sources of research for purposes such as supporting their own professional learning and designing policies and programs. Few reported using these sources to select programs, although current education policies related to the use of research evidence focus on this purpose.

Overall, these results build on previous findings to suggest that education leaders often turn to others whom they know to access research that informs their decision making (Farrell et al., 2018; Penuel et al., 2016), that research use can be understood as an interactive process (Honig & Coburn, 2007), and that research is used for a variety of purposes (Weiss & Bucuvalas, 1980). Opportunities—such as those provided through the CSSS professional association—where education leaders have occasions for sustained interactions with researchers may lead to the use of evidence that researchers recognize as rigorous in its methods and warranted in its conclusions and use. Such interaction, likewise, may improve the usefulness and relevance of evidence that researchers produce with the aim of informing and improving education policy and practice (Farrell et al., 2018).

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Informing State Legislation on Prekindergarten Education: The Regional Educational Laboratory (REL) Northeast and Islands

Title: Using the Vermont Universal PreK Research Partnership to inform prekindergarten legislation in the state

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Abstract: Beginning in January 2017, the Vermont Universal PreK Research Partnership began. This is a researcher-practitioner partnership between the Regional Educational Laboratory (REL) Northeast and Islands and the Agencies of Education and Humans Services in Vermont. The primary goal of this partnership is to conduct research guided by the needs of the state and to inform the agencies and state legislature as they consider changes to be made to Act 166. Vermont's 2014 universal preK legislation (Act 166) provides state-funded, universal access to preK programs for 3- to 5-year-olds in the state. Eligible children can enroll in state-prequalified preK programs through a mixed-delivery system of public and private providers at no cost to families. Families have the option of enrolling their child in any prequalified program across the state regardless of location.

The partnership's first study, to be published this fall, was a descriptive study that explored three primary research questions: (1) To what extent are children with different characteristics enrolled in public school preK programs, private preK programs, and programs at each STARS quality rating? (2) To what extent are preK children enrolled in a program within the boundaries of their local education agency? And, (3) After other characteristics are controlled for, which characteristics of preK children are associated with the likelihood of being enrolled in a public school rather than a private preK program, a five-star program rather than a three- or four-star program, and a program within rather than outside the boundaries of a child's local education agency? In 2016/17 approximately 8,600 children were enrolled in 383 state prequalified preK programs in Vermont. The sample for this study included 5,622 children who were residents of Vermont and enrolled in 282 state prequalified preK programs in the 2016/17 school year.

For research question 1, descriptive analyses were conducted, including calculating means, standard deviations, and percentages. For research question 2, the study team determined whether a program was located within the boundaries of the child's local education agency and calculated the percentages of children enrolled in programs within and outside the boundaries of their local education agency. Next, the number of prequalified preK programs within the boundaries of each child's local education agency was calculated, and the average numbers were reported. One-way analysis of variance or chi-square analyses were conducted to assess statistically significant differences ($p < .05$) among groups in the descriptive findings. For research question 3, the study team estimated three logistic regression models on the association between child characteristics and the likelihood of each of three outcomes: (1) Enrolling in a public school program versus a private program; (2) Enrolling in a five-star program versus a

three- or four-star program; and, (3) Enrolling in a program with the boundaries of the child's local education agency versus a program outside those boundaries.

This study found that during the first year of full implementation in 2016/17, children enrolled in both public school and private programs at similar rates. Vulnerable children—those with individualized education programs and those eligible for the national school lunch program—were more likely to enroll in public school programs and in programs with higher quality ratings than their counterparts. Children with fewer prequalified preK programs within the boundaries of their local education agency were more likely to enroll in public school programs and programs outside the boundaries of their local education agency. These findings suggest that in situations where there are fewer choices within the local education agency, families may be enrolling their child in preK programs that are farther from their home. Findings from this study were presented to the Vermont House and Senate Education Committees in spring 2019 and will inform the legislature as they plan to make changes to the preK legislation in the upcoming 2020 session. In a recent conversation with Representative Webb, she said, "It is my intention to use the… report to help drive a more productive conversation with stakeholders in 2020." Like other partnerships that are REL-funded, mechanisms for how to document such use of research will also be described.

Informing State Policy on Teacher Preparation: The Regional Education Laboratory (REL) Midwest

Title: Using research to align teacher supply and demand in Michigan

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Abstract: A key objective of the Michigan Department of Education (MDE) is equitable access to effective teachers for all students in the state. Access to effective teachers, however, is hindered by teacher shortages. To gain a nuanced understanding of teacher shortages and project future trends in teacher supply and demand, MDE partnered with Regional Education Laboratory (REL) Midwest to conduct a study of teacher shortages in Michigan. The partnership includes Midwest's Alliance to Improve Teacher Preparation—a group of stakeholders from Michigan districts, public and charter schools, universities, and teachers' unions who share in MDE's objective to improve access to effective teachers.

Using administrative MDE data and publicly available data, REL researchers conducted a systematic analysis of trends in teacher demand, supply, and shortages in Michigan public schools between 2013/14 and 2017/18 and projected shortages and surpluses from 2018/19 to 2022/23. The study found that total enrollment in Michigan public schools declined by 3 percent between 2013/14 and 2017/18, while enrollment of English learner students increased by 27 percent. Over the same period the size of the overall teacher workforce in Michigan declined by 2 percent, but the number of newly certified active teachers declined by 23 percent. The study also found some subject areas and regions of the state are projected to experience teacher shortages between 2018/19 and 2022/23. The greatest shortages, for example, are expected in business education and career and technical education, and in the Upper Peninsula and Northwest.

The study was released in August 2019. Since its release, REL Midwest researchers have disseminated findings to MDE, MAITP members, and other Michigan stakeholders and collected their feedback. The panelists will draw on this feedback to discuss how MDE and other education stakeholders have used or plan to use the study's findings to address teacher shortages in Michigan. For example, the panelists will discuss the state's support of partnerships between teacher preparation programs and local districts that could help align teacher preparation with local demand. The panelists also will discuss how the state, in collaboration with teacher preparation institutions, may address a rapid decline the number of newly certified teachers in Michigan, for instance through changes in teacher preparation and certification requirements. The panelists will devote extra attention to programs and policies for attracting existing teachers to where they are needed the most as the study suggests that Michigan has and will continue to have a sufficient supply of active teachers, but the supply is misaligned with demand. For

example, the panelists will discuss strategies such as year-round marketing and a centralized job bank to improve districts' access to available teachers. Finally, the panelists will discuss how the study met or did not meet the needs of the partnership and what additional research evidence the partnership may need moving forward.