Commentary

Building a Networked Improvement Community to Promote Equitable, Coherent Systems of Science Education: How a State-Level Team Can Support District-Level Change Efforts

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Abstract

This paper describes a Networked Improvement Community comprised of a network of 13 states focused on improving coherence and equity in state systems of science education. Grounded in principles of improvement science adapted from healthcare, we are developing and testing resources for formative assessment in science, with the aim of developing systems where actors at every level of the education system are oriented toward a common vision for science, and where there is a common commitment to equity. The paper describes these strategies and implications of this work for district-level change efforts.

Key Words

science education, networked improvement communities, coherence, equity

The purpose of this paper is to describe a partnership between two universities and a professional association of state education agency leaders in science.

The paper describes the aims of the partnership and its key activities, which involve not only state leaders but also teams comprised of district administrators, teacher leaders, and other organizations that are integral to creating coherent and equitable systems of science and education.

The partnership describes the roles that education leaders can play in providing more coherent guidance to teachers regarding subject matter teaching, a key condition for implementing changes associated with adoption of ambitious new standards. The paper is written from the perspective of leaders in this partnership.

Need for the Partnership

Many educators see their state department of education as an obstacle to improving teaching and learning. Teachers can view the state as a source of incoherent guidance about what they should be doing in their classrooms, even when state leaders make efforts to bring standards, assessments, and curricular frameworks into alignment.

Leaders try to create instructional coherence by buffering teachers from these different influences (Spillane, Parise, & Sherer, 2011). When standards change, teachers and principals brace for more incoherence, rather than embracing the possibility of renewal and reform.

But what if state leaders worked together with other stakeholders to craft more coherent guidance and to build supports for teachers and building leaders to develop a common understanding of equitable teaching and learning? Can state leaders, working in collaboration with teams from multiple states, do anything to increase the coherence of their state systems and achieve ambitious equity goals?

Those are the questions that a network of state teams are asking as part of a research-practice partnership between the Council of State Science Supervisors and university researchers at the University of Colorado Boulder and the University of Washington.

This partnership, funded currently by the National Science Foundation, is organized as a or "NIC." In a NIC, a network of educational organizations forms to address a specific, persistent problem of practice, and collaborates to design and test solutions (Bryk, Gomez, Grunow, & LeMahieu, 2015). In a NIC, the roles of researcher and educator are intentionally blurred.

In this particular NIC, the researchers bring relevant expertise in designing improvement strategies while the educators contribute by co-designing strategies and testing them as well as collecting and interpreting the resulting data.

Improving Coherence and Equity as a Persistent Problem in State Systems

To describe a state system of education as providing guidance to teachers means at least three things. First, it means that all of the key actors in the system share a common vision of what improvement looks like. When that is true, the system is said to be "vertically coherent," because at whatever level we look in the system, we see

implementing the across different components of the education system (e.g., via assessment, professional development) and at different levels (i.e., elementary, middle, high) (Hopkins, 2016). As such, CSSS members serve as key brokers of research-based ideas about improvement statewide, as they often draw on and share the ideas they learn about in their work with district and school personnel.

Looking to Improve Improvement: Building a Networked Improvement Community of Science Education Leadership Teams

To extend the work of BCSSE, the Council of State Science Supervisors formed a partnership with researchers at two institutions—the University of Colorado and University of Washington.

The aim of this partnership and NSF-funded project, Advancing Coherent and Equitable Systems of Science Education (ACESSE), is to enable a network of teams to

another reason: it sits at the intersection of curriculum, instruction, and standards, and to get better at it, teachers need professional development. In other words, improvement requires horizontal coherence.

To be effective, formative assessment also needs to be guided by a vision for teaching and learning, another reason that it is a good leverage point for the partnership's effort to bring system actors into alignment with the s vision for equitable science teaching and learning. Finally, certain kinds of formative assessment (e.g., Tzou & Bell, 2010) can draw attention to ways that science teaching does or does not connect with students' interests and experiences, a key strategy for promoting equity.

This focused attention on deepening formative assessment practice is only part of the process. The partnership is collaboratively designing a set of resources state teams can use to help build a common understanding of the vision of the while the states teams are helping adapt and test these resources based on problems identified from surveys and focus groups.

The research team is developing a

The partnership's specific tools for supporting equitable, three-dimensional classroom assessment may also be used across a district. The resources and activities designed by the partnership can be just as easily implemented by a network of district science coordinators, within a building-wide professional development, or by a peer-led professional learning community.

Finally, they relate directly by linking what teachers do every day to the "why" of what they do—the vision from the around which states hope to organize their systems of science education.

Ultimately, leading district-level change requires distributed leadership at the district level—that is, multiple departments, school leaders, and teacher leaders working together toward common aims in the face of changing environments and with limited resources.

But state leaders can clear the way for those leaders and provide models for getting everyone in the building on the same page with respect to a vision for teaching and learning. Such models are crucial for implementing any new policy.

By modeling participatory, collaborative approaches to reform such as networked improvement communities, state leaders show the way for principals to lead their school in a way that mobilizes support around shared reform goals and that bolsters morale.

Leading for coherence and equity in turbulent environments requires leadership activity at all levels.

References

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