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Thank you for your request to our REL Reference Desk regarding **established and forming Networked Improvement Communities (NICs)**. Ask REL Southwest is part of a collaborative Ask-A-REL reference desk service provided by the 10 regional educational laboratories (RELs). By design, this service functions much in the same way as a technical reference library, by providing references, referrals, and brief responses in the form of citations for research-based education questions.

**Please note that REL Southwest has not done an evaluation of the resources themselves but offers this list to you for your information only.**

### BACKGROUND

Networked Improvement Communities— “A key idea is that in order to engage in quality improvement in any system, we need to be able to ‘see the system as a whole’ and not just step in and meddle with one part of it.

This is an approach which links ‘top down’ measures of performance with a ‘bottom up’ approach to organisational improvement, including all stakeholders in understanding and analysing the problem and developing shared aims and purposes. Having identified a ‘high leverage’ problem for improvement and a community generated driver diagram,<sup>1</sup> attention is focused on processes which need improvement and will contribute to achieving the shared purpose. Commitment to a common measurement model and multiple rapid prototype interventions which proceed as part of a shared network of improvement, enable the networked community to ‘learn fast, fail fast and improve fast’.”<sup>2</sup>

Following an established REL Southwest protocol, we conducted a search for research reports, websites, as well as descriptive briefs on established and forming Networked Improvement Communities. **We searched the references in the response from the most commonly used resources of research, but they are not comprehensive and other relevant references and resources may exist.** The sources included federally funded organizations, additional research institutions, educational databases, and general Internet searches using Google and Bing. See the methods section at the end of this Ask A REL for additional information on how we identified the following sources.

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<sup>1</sup> A Driver Diagram is an improvement tool used to communicate a theory of practice improvement (“A Theory of practice improvement: PC1: Improvement science basics,” A PowerPoint presentation by Alicia Grunow).

For more information on *Driver Diagrams* see “Developing a Driver Program for a NIC” a list of references by Anthony S. Bryk. <http://www.slideshare.net/learningemerg/bryk-2014-developing-a-driver-diagram-for-a-nic>.

<sup>2</sup> “Networked Improvement Communities: Bryk lectures Bristol 2014,” *Learning Emergence*. <http://learningemergence.net/2014/05/27/tony-bryk-lecture/>.

## QUESTION

**Please provide the latest information regarding recent research on Networked Improvement Communities (NICs), including which states have established or are in the process of forming NICs.**

## SOURCES

Bryk, A. S. (2014). AERA Distinguished Lecture: Accelerating How We Learn to Improve *Educational Researcher*, v44 n9 p467-477.  
<https://eric.ed.gov/?id=EJ1084855>.

*From the ERIC abstract.* “A chasm is growing between our rapidly rising aspirations for our educational systems and what schools can routinely accomplish. Education needs an improvement paradigm--one that recognizes the complexity of the work of education and the wide variability in outcomes that our systems currently produce. This article sketches out such a paradigm. It joins together the discipline of improvement science with the power of structured networked communities to accelerate learning to improve. These networked improvement communities (NICs) combine analytic thinking and systematic methods to develop and test changes that can achieve better outcomes more reliably. NICs are inclusive in drawing together the expertise of practitioners, researchers, designers, technologists, and many others. And they organize their activities in ways akin to a scientific community. They develop practice-based evidence as an essential complement to findings from other forms of educational research. The point is not just to know what can make things better or worse; it is to develop the know-how necessary to actually make things better. [This article was adapted/derived from the AERA Distinguished Lecture given on April 6, 2014, at the AERA Annual Meeting.]”

Cannata, M., Redding, C. & Rubin, M. (2016). Continuous Improvement in Action: Educators' Evidence Use for School Improvement. *Society for Research on Educational Effectiveness*. <https://eric.ed.gov/?q=ED567214&id=ED567214>.

*From the ERIC abstract.* “The focus of the article is the process educators use to interpret data to turn it into usable knowledge (Honig & Coburn, 2008) while engaging in a continuous improvement process. The authors examine the types of evidence educators draw upon, its perceived relevance, and the social context in which the evidence is examined. Evidence includes data related to student or school outputs (e.g., passing rates), inputs (e.g., student demographic information), school processes (e.g., data on program implementation) and perceptions (e.g., surveys) (Marsh, 2012). Previous research also indicates that educators draw on evidence substitutes--anecdotal information, experience, intuition, ideological preference, and customary practice (Bryk & Gomez, 2008; Dorman & Binnewies, 2015; Ingram, Louis, & Schroeder, 2004). Considering this diversity of evidence enabled the authors to examine how teacher-led implementation teams come to shared conclusions about what they are learning about their improvement efforts. The following research questions are asked: (1) How are educators learning about and using data for the improvement of a school-wide reform; (2) What types of evidence are they citing to make claims about what they are learning; and (3) What are the barriers educators face

as they learn how to apply data to make claims about what they are learning? Two tables are appended.”

Dolle, J. R., Gomez, L. M., Russell, J. L., & Bryk, A. S. (2013). More than a network: Building professional communities for educational improvement. *Yearbook of the National Society for the Study of Education*, v112 n2 p443-463.  
<https://eric.ed.gov/?id=EJ1018620>.

*From the ERIC abstract:* “This chapter is a case study of the Carnegie Foundation for the Advancement of Teaching's Pathways [TM] program. The goal of the Statway [Registered Trademark] and Quantway [Registered Trademark] pathways is to improve the success rate of community college students who place into developmental mathematics. What makes these programs unique is their strategy of building a particular kind of professional network, what Carnegie refers to as a Networked Improvement Community (NIC), to organize and lead an array of continuous improvement processes. NICs are a social mechanism through which the collaborative designs and practical theories produced by design-based implementation research (DBIR) can become live resources for the improvement of systems. NICs are comprised of highly structured groups of education professionals, working in collaboration with designers and researchers, to address a practical problem. Driver diagrams are introduced as a tool for organizing the improvement work of NICs. After briefly describing several drivers behind the Pathways program, the chapter details the main elements of the network organization driver as a distinct approach to building communities aimed at improving education.”

Lewis, C. (2015). What is improvement science? Do we need it in education?  
*Educational Researcher*, v44 n1 p54-61. <https://eric.ed.gov/?id=EJ1052271>.

*From the ERIC abstract:* “The theory and tools of "improvement science" have produced performance improvements in many organizational sectors. This essay describes improvement science and explores its potential and challenges within education. Potential contributions include attention to the knowledge-building and motivational systems within schools, strategies for learning from variations in practice, and focus on improvement (rather than on program adoption). Two examples of improvement science in education are examined: the Community College Pathways Networked Improvement Community and lesson study in Japan. To support improvement science use, we need to recognize the different affordances of experimental and improvement science, the varied types of knowledge that can be generalized, the value of practical measurement, and the feasibility of learning across boundaries.”

Martin, W. G. & Gobstein, H. (2015). Generating a networked improvement community to improve secondary mathematics teacher preparation: Network leadership, organization, and operation. *Journal of Teacher Education*, v66 n5 p482-493.  
<https://eric.ed.gov/?id=EJ1079272>.

*From the ERIC abstract:* “The Mathematics Teacher Education Partnership (MTE-Partnership) was formed to address the undersupply of new secondary mathematics teachers who are well prepared to help their students attain the goals of the Common

Core State Standards and other college- and career-ready standards. This national consortium of more than 90 universities and 100 school systems has been organized as a Networked Improvement Community (NIC), which combines the disciplined inquiry of improvement science with the power of networking to accelerate improvement by engaging a broad set of participants. Initiating a NIC involves a number of challenges described in the NIC Initiation Framework. This case study analyzes the MTE-Partnership's progress in one domain of that framework: network leadership, organization, and operation. Areas of discussion include convening the network, establishing a membership framework and participation structures, building leadership and hub functions, developing a communications infrastructure, and finding necessary resources.”

Russell, J. L., Meredith, J., Childs, J., Stein, M. K. & Prine, D. W. (2015). Designing Inter-Organizational Networks to implement education reform: An analysis of state race to the top applications. *Educational Evaluation and Policy Analysis*, v37 n1 p92-112. <https://eric.ed.gov/?id=EJ1050966>.

*From the ERIC abstract.* “This study sought to understand the opportunities and challenges associated with the implementation of state designed Race to the Top (RttT) funded reform networks. Drawing on a conceptual framework developed from the networked governance literature, we analyzed the 12 state RttT grantees' applications. Our analysis revealed that states designed large implementation networks with potential to bring a wide range of resources to bear on reform efforts, particularly through participation of numerous nonsystem actors. However, coordinating large and diverse networks places state education agencies (SEAs) in a new and challenging role. The extent to which networks extend state capacity to support educational improvement or further complicate the work of SEAs remains an open question. We propose a model including a set of theoretical propositions to guide future research.”

## ADDITIONAL RESOURCES

Bryk, A. S., Gomez, L., & Grunow, A. (2010). Getting ideas into action: Building networked improvement communities in education. Carnegie Perspectives. <https://eric.ed.gov/?id=ED517575>.

*From the ERIC abstract.* “In this Carnegie essay by Anthony Bryk, Louis Gomez, and Alicia Grunow, the authors argue that the social organization of the research enterprise is badly broken and a very different alternative is needed. They instead support a science of improvement research and introduce the idea of a networked improvement community that creates the purposeful collective action needed to solve complex educational problems. The essay builds off an earlier essay by Bryk and Gomez, “Ruminations on Reinventing an R&D Capacity for Educational Improvement,” prepared for a 2007 American Enterprise Institute Conference.” NOTE: This source was not peer reviewed.

Coburn, C. E., Penuel, W. R. & Geil, K. E. (2015). Case study IV: Carnegie Foundation for the Advancement of Teaching's Networked Improvement Communities (NICs) *William T. Grant Foundation*. <https://eric.ed.gov/?id=ED568398>.

*From the ERIC abstract:* “The Carnegie Foundation for the Advancement of Teaching is a nonprofit, operating foundation with a long tradition of developing and studying ways to improve teaching practice. For the past three years, the Carnegie Foundation has initiated three different Networked Improvement Communities (NICs). The first, Quantway, is addressing the high failure rate of students in developmental mathematics. Eight community colleges in three states are part of this network, as are several intermediary organizations whose work focuses on curriculum, faculty development, and student support. The second NIC, Statway, is also focused on community colleges. It involves 19 colleges in five states and is a pathway to college statistics. The third NIC, Building a Teacher Effectiveness Network (BTEN), is working on teacher quality, specifically on developing and retaining teachers in the first three years of teaching. The BTEN network members include the Carnegie Foundation, the Institute for Healthcare Improvement (IHI), the American Federation of Teachers (AFT), New Visions for Public Schools (NVPS), the Austin Independent School District (AISD), and the Baltimore City Schools (BCS). Carnegie staff act as the primary facilitators of the work, guiding the improvement process. IHI and AFT also help facilitate the improvement work. AISD, BCS, and NVPS are sites that test ideas. This case study discusses the partnership and is organized into the following sections: (1) History; (2) Nature of the Partnership; (3) Challenges; and (4) Benefits. [This case study is a supplement to "Research-Practice Partnerships: A Strategy for Leveraging Research for Educational Improvement in School Districts," ED568396.]” NOTE: This source was not peer reviewed.”

**The Agency of Education in Vermont**—<http://education.vermont.gov/vermont-schools/education-quality>

*From the website:* “This agency “provides a statewide system of support for continuous improvement by:

- Training and support for applying an improvement science approach to continuous improvement planning;
- Guiding the administration of comprehensive needs assessments and implementing continuous improvement plans;
- Differentiating support and monitoring of continuous improvement plans; and
- Organizing and managing systems of Networked Improvement Communities (NICs) in which schools can test and revise improvement theories, as well as share promising practices.”

**Mid-Valley Mid-Coast Partnership— College of Education**

<http://blogs.oregonstate.edu/midvalleycoastlearn/networked-improvement-communities/>

*From the website:* “For the past five years, the Carnegie Foundation for the Advancement of Teaching has been pioneering a fundamentally new vision for the research and development enterprise in education. We seek to join the discipline of improvement science with the capabilities of networks to foster innovation and social learning. This approach is embodied in what Carnegie refers to as Networked

Improvement Communities (NICs). These NICs are scientific learning communities distinguished by four essential distinguishing characteristics:

- **Focused** on a well specified common aim,
- **Guided** by a deep understanding of the problem, the system that produces it, and a shared theory of practice improvement,
- **Disciplined** by the rigor of improvement science, and
- **Coordinated** to accelerate the development, testing and refinement of interventions, their more rapid diffusion out into the field, and their effective integration into varied educational contexts.

In seeking to move NIC ideas into action, Carnegie has been committed to a learning-by-doing strategy. This strategy now moves us to offer a NIC Design Learning Lab for a small number of STEM initiatives.”

The site lists 10 project partners comprising school districts, community colleges, Oregon State University’s Office of the President and the College of Education.

#### **VASS Rural Math Innovation Network Project Narrative—**

<https://innovation.ed.gov/files/2016/11/vassNAR.pdf>.

*From the proposal:* “Unlike traditional math instruction of “learning terms and practicing procedures,” the researchers hypothesize the lessons plans enable the teacher to guide students in thinking more creatively and critically about the real world, an exploratory and inquiry-based approach that better develops a student’s deep understanding. Consequently, VASS and its partner LEAs seek to embrace this new research and also employ improvement science research on network improvement communities (NIC) advocated by the Carnegie Foundation for the Advancement of Teaching (Byrk, 2015). VASS and partner LEAs (see MOUs in Appendix G) will form a NIC of innovation-minded math teachers to create SEL lesson plans for instruction of students in pre-Algebra and Algebra 1.

A NIC is a collegueship of expertise that builds on the focused work and creativity of many. It is an intentionally designed social organization with a distinct problem-solving focus. Jackson and Temperley (2006, p. 2) point out two ways such a network differs from a professional learning community (PLC): “The first is the school as a unit has become too small-scale and too isolated to provide rich professional learning for its adult members in a knowledge-rich and networked world. A new unit of meaning, belonging and engagement – the network – is required. The second is that the collaborative learning and enquiry norms of school PLCs 6 actually require openness to external learning from networks....The permeability to external learning referred to, from other schools and from the public knowledge base, is crucial to informed internal learning.” Networks foster teacher learning (Katz, Dack, & Earl, 2009).

Use of a NIC to develop and implement the SEL lesson plans is a modern-day strategy that considers what has been learned in important mathematics education reform efforts to address persistent problems for teachers and schools in rural America. A common

lesson learned in most of the 30 Rural Systemic Initiatives (RSIs) (Harmon & Smith, 2012) is improvement-minded mathematics and science educators in high poverty rural areas need supportive experiences with like-minded peers. It is difficult to implement, much less innovate, solutions to problems of practice in high poverty rural school districts.”

**REL Midwest—Collaboration for success: Michigan networked improvement community—** <http://www.relmidwest.org/newsroom/collaboration-success-michigan-networked-improvement-community>

*From the website:* “To help the state reduce achievement gaps in Focus schools, REL Midwest partnered with the Michigan Department of Education, intermediate school districts, local school districts, and schools to form a networked improvement community (NIC). The NIC focused its efforts on the effect of additional daily math practice on math fluency and achievement.

The NIC used a five-step continuous improvement process to identify the problem, create an intervention, iteratively test and refine the intervention, and share their findings.

Find out more about the process and the experiences of the NIC members through the following [hyperlinked resources]:

- [Podcast – We Are Better Together: Researchers & Educators Partner to Improve Students’ Math Skills](#)
  - The latest podcast from REL Midwest highlights the Michigan Focus NIC project and includes interviews from Wexford Montessori Academy, which participated in the NIC.
- [Newsroom Post – Many Heads Are Better Than One: Principal Reflects on Regional Educational Laboratory Midwest Collaborative Project](#)
  - Nancy Lubeski, principal at Wexford Montessori Academy in Lansing, participated in the Michigan Focus NIC. Read her Q&A interview on the REL Midwest Newsroom.
- [Michigan Focus Schools Networked Improvement Community – Continuous Improvement Process](#)
  - Read the project description and access resources, products, and project meeting notes on the American Institutes for Research’s website.”

## **METHODS**

### **Keywords and Search Strings Used in the Searches:**

Networked Improvement Communities; "State Education Agencies" and "Networked Improvement Communities"; Networks

## Search of Databases and Websites

- Institute of Education Sciences (IES) website (<http://www.ies.ed.gov>) and IES sources: Regional Educational Laboratory (REL) Program, National Center for Education Statistics (NCES), National Center for Education Research (NCER), What Works Clearinghouse (WWC)
- ERIC database ([www.eric.ed.gov](http://www.eric.ed.gov))
- Google Scholar ([scholar.google.com](http://scholar.google.com))
- Google ([www.google.com](http://www.google.com))
- Bing ([www.bing.com](http://www.bing.com) )

## Criteria for Inclusion

REL Southwest selected resources that provide research on established and forming Networked Improvement Communities. When REL Southwest staff reviewed resources, we considered – among other things – three factors:

1. Date of Publication: The most current information (primarily published from 2013 to the present) is included.
2. Source and Funder of the Report/Brief/Article: Priority was given to publications written in relevant, peer-reviewed journals or reports or produced by well-known research organizations.
3. Methodology: sources include reported studies, literature reviews and policy reports.

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