

Theory of NIC Development Wednesday, April 4, 2018

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Session Overview

- What are the distinguishing features of a networked improvement community (NIC), and how do NICs change over time?
- In this session, NIC scholars and coaches will share Carnegie's current theory of NIC development.
- Methods and findings will be explored through a case study of the Better Math Teaching Network (BMTN), a NIC which aims to improve student engagement in algebra.
- You will also practice applying the framework to your own organization



Session Agenda

- Presentation on NIC Development Framework
- Practice applying the NIC development framework to your own organization



NIC DEVELOPMENT FRAMEWORK



NIC Development Framework



Catalyzing the development of a scientificprofessional **learning community**

Scientific-Professional Learning Community

- NICs are communities grounded by shared goals, norms, theories, and practices
- NICs are professional communities engaged in disciplinary inquiry
- NICs coordinate and accelerate learning through strategic knowledge management



The Better Math Teaching Network





The Pitt Developmental Evaluation



Our Process





Critical domains of effort for operating a NIC



The NIC Core Technology



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The BMTN Driver Diagram

Student Engagement in Algebra

2,019 in 2019: By 2019, the number of students who connect, justify, and solve with depth in algebra will increase by 2,019.

Connect. Make connections among mathematical algorithms, concepts, and application to real-world contexts, where appropriate.

Justify. Communicate and justify mathematical thinking as well as critique the reasoning of others

Solve. Make sense of and solve challenging math problems that extend beyond rote application of algorithm

Mathematics Instruction Mathematical instruction provides ongoing opportunities for all students to *connect*, *justify*, and *solve* in algebra.

Classroom Environment Positive, caring learning environment for all students

Student Attitudes Students see school and learning as important and valuable

Student Readiness Students enter algebra with the requisite knowledge, skills, and dispositions to succeed



Structuring network roles and relationships



Structuring network roles and relationships: Participation and engagement



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Participation and engagement

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Participation structures specify members' roles and clear expectations for ongoing engagement in the network. This likely includes planning and executing: (1) network meetings and (2) activity during action periods between meetings.

> **Participation &** Engagement

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Participation & engagement in BMTN





Teachers find BMTN activities useful



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Teachers value participation

The majority of teachers **strongly agree** there is value in participation in the network

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Participation challenges

Challenges (Survey)



Using improvement science Finding time to meet with your virtual small group Integrating this work with the curriculum at your school Using student-centered instruction Time required for participation in network meetings Time spent traveling to network meetings Communication and clarity about expectations for your... Interpersonal challenges in your virtual small group (can be...

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Structuring network roles and relationships: Social connections



Emerging network of connections in the BMTN



Connect-1 Connect-2 Connect-3 Justify-1 Justify-2 Justify-3 Justify-4 Justify-6 Justify-7 Justify-8 Justify-9 On leave Solve-1 Solve-2 Solve-3

Lacks an Attribute value

Work time choices during network meetings cluster by small group and joint work structures

Structuring network roles and relationships



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Fostering vital norms and identities



Fostering vital norms and identities: Evidence-based culture



- Members display a growing commitment to the testing process, grounded in evidence, to guide their improvement work.
- Members feel safe in sharing their data and engaging in critical conversations about what is working and what is not.
- Members embrace the need to document small tests of change so learning can guide the work of others
- Members embracing opportunities to test and build on the improvement work of others in the network

Evidence Based Culture

Developing an evidence-based culture in the BMTN

Teachers are enthusiastic about the use of PDSA cycles to improve their practice



4 Strongly positive

1 Strongly negative



Developing an evidence-based culture in the BMTN



All teachers engaged in PDSA cycles and small group meetings

Challenges we are seeing with PDSAs

Documentation not capturing the work Relying on intuition about outcome of test versus data-driven next steps

Connected to challenges with practical measurement

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Fostering vital norms and identities: Evidence-based culture



Collective Identity

- Members of a mature NIC will hold a "we perspective", identifying as members of a scientific-professional learning community improving practice in *our* field, in addition to a singular focus on their classroom or school
- Members begin to see how they can contribute to the production of practical knowledge through their work in the network

Scientific-Professional Learning Community





NIC Development Framework



Scientific-Professional Learning Community

Back to end goal...scientific-professional learning community

Scientific-Professional Learning Community

- NICs are communities grounded by shared goals, norms, theories, and practices
- NICs are professional communities engaged in disciplinary inquiry
- NICs coordinate and accelerate learning through strategic knowledge management



Applying the framework

- Think about your own organization.
- How does it approach problem solving and collective learning?
- In what ways does it look like a scientific professional learning community?
- Purpose of this activity:
 - Help you deepen your understanding of the framework by applying it.
 - Generate some ideas about how your organization might develop the characteristics of a scientific professional learning community.

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Activity

- Read the handout, rate your own organization on the three components of a scientific professional learning community, and reflect on the provided questions (10 minutes).
- Discuss your responses with a table partner or a group of three. (15 minutes)
- Full group share out (10 minutes)
 - What are your organization's areas of strength? Weakness?
 - What action steps might you take and why?
 - What other questions do you have about the NIC development framework?

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For more information on the framework

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