IES **Institute of Education Sciences**

Evaluating the Implementation of Networked Improvement Communities in Education: An Applied Research Methods Report

Evaluating the Implementation of Networked Improvement Communities in Education: An Applied Research Methods Report

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This report presents an approach to evaluating networked improvement communities (NICs) and describes the tools used to apply the approach to a formative evaluation of the Minnesota Alternative Learning Center Networked Improvement Community (Minnesota ALC NIC). In fall 2019 leaders at the Minnesota Department of Education requested support from the Regional Educational Laboratory (REL) Midwest to address low high school graduation rates among students in alternative learning centers (ALCs). In partnership with five ALCs, the department and the REL Midwest participated in the Minnesota ALC NIC to raise graduation rates at ALCs by improving their use of competency-based credit recovery practices. REL Midwest researchers then developed an approach for evaluating networked improvement communities (NICs) and applied it to the Minnesota ALC NIC. This report shares the findings from the evaluation, using them to illustrate the process of analyzing and interpreting the data collected on NIC implementation, and discusses the limitations of the tools. The approach can be adapted to evaluate other NICs in prekindergarten–grade 12 education. The tools require basic quantitative and qualitative analysis skills, and evaluators or facilitators can adapt them to provide formative feedback on whether an NIC is operating as intended.

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BACKGROUND

Interest is growing in the use of improvement science to address the complex problems that arise in education practice. Improvement science, which entails cycles of activities designed to test promising practices, was developed initially to enhance industrial manufacturing, but it has since been applied in fields such as medicine and engineering and, more recently, in education (Bryk, 2015). One common approach is to use improvement science processes within collaborative research partnerships, known as networked improvement communities (NICs), which engage in collective efforts to improve systems (Engelbart, 1992; see box 1 for definitions of key terms).

Using continuous improvement research methods, NIC participants identify a common problem of practice and work together to test and refine solutions in different contexts. Through this process NICs learn what works, for whom, and under what conditions (Bryk et al., 2015). When the process is well implemented, NICs accelerate participants' capacity to learn from one another, which can lead to improvements in practice (Bryk et al., 2015; Russell et al., 2017). While NICs are increasingly being used in education, little research has been conducted on their implementation or outcomes in prekindergarten (preK)–grade 12 education.

The Minnesota Alternative Learning Center Networked Improvement Community

In 2018 the Minnesota Department of Education requested support from the Regional Educational Laboratory (REL) Midwest to identify ways to increase high school graduation rates among students taking courses that they had previously failed. A statewide review of programs that support students in completing courses—also known as credit recovery programs—revealed that students in need of credit recovery often moved from a traditional or charter high school to one of more than 200 state-approved alternative programs, also known as alternative learning centers (ALCs), which serve secondary students who are off track to graduate, often because they have failed one or more high school courses. However, ALCs in Minnesota had lower high school graduation rates than the state's traditional or charter high schools.

As a result of the review, ALC education leaders in the Minnesota Department of Education made improving the graduation rates of high school students in ALCs a priority. They chose to focus on implementation of competency-based education, which they believed held promise for improving outcomes among the students they served. Unlike students in traditional preK–12 education, who attend classes at the same time as their peers and receive credit for a course based on participation and effort, students in competency-based courses have greater autonomy to determine where and when they learn and the pace of learning. There are differences, as well, in the types of assessments used to measure learning (Haynes et al., 2016); students in ALCs receive credit for a course when they demonstrate mastery of the competencies identified for that course.

In response to the review, the Minnesota Department of Education and the REL Midwest, in partnership with five Minnesota ALCs, participated in the Minnesota Alternative Learning

Box 1. Definition of key terms

Aim. A measurable outcome the network is trying to achieve.

Alternative learning center (ALC) teams. Schools that serve secondary students who are off track to graduate, often because they have failed one or more high school courses. ALC teams are groups of individuals from each ALC working together on Plan-Do-Study-Act cycles.

Change idea. The practices tested using Plan-Do-Study-Act cycles. By testing similar change ideas in different contexts, networked improvement community (NIC) participants learn what works, for whom, and in what context.

Continuous improvement milestone. Key activities that participants carry out as part of the continuous improvement research process. These milestones are described in box 2.

Continuous improvement research. An approach to research based on improvement science principles and iterative cycles of testing practices (Langley et al., 2009). Plan-Do-Study-Act cycles are among many models of continuous improvement research (Park et al., 2013).

Driver diagram. A visual display of NIC participants' theory of the factors that likely contribute to achieving their aim. Primary drivers contribute directly to achieving the aim, while secondary drivers are components of primary drivers.

Fishbone diagram. Used to create a visual display of the root causes of a problem of practice. A statement of the problem is placed at the head of the fishbone. Each major "bone" represents hypothesized root causes of the problem.

Improvement science. Cycles of activities designed to test promising practices for addressing challenges (Improvement Science Research Network, 2016).

Minnesota Alternative Learning Center Networked Improvement Community (Minnesota ALC NIC) evaluation team. The Regional Educational Laboratory Midwest evaluators who developed an evaluation approach to assess implementation of NICs in preK–12 education and applied the approach to evaluate the implementation of the Minnesota ALC NIC.

Minnesota ALC NIC facilitators. Three Regional Educational Laboratory Midwest facilitators who were experts in NICs and were included as participants in the Minnesota ALC NIC. The Minnesota ALC NIC facilitators convened the ALC teams at the five NIC meetings and led continuous improvement activities, such as developing an aim statement and conducting a root cause analysis. Between NIC meetings, the Minnesota ALC NIC facilitators held regular check-in meetings to support each ALC team.

Networked improvement community (NIC). A collaborative research partnership that applies the principles of improvement science within networks of organizations. NIC participants engage in Plan-Do-Study-Act cycles to learn what works.

Plan-Do-Study-Act cycle. Rapid cycles of designing, implementing, testing, and redesigning to learn about what works in different contexts, a common approach in continuous improvement research.

Center Networked Improvement Community (Minnesota ALC NIC) to improve the use of competency-based credit recovery practices and thus ultimately raise high school graduation rates for students in ALCs. Participants in the NIC included a leader from the Minnesota Department of Education, three facilitators from the REL Midwest, and 36 teachers and

administrators from five ALCs in the greater Twin Cities area.[1] The Minnesota ALC NIC met four times from September 2019 to February 2020. There was full attendance at each of these meetings, although one ALC left the NIC after the October 2019 meeting and one ALC joined the NIC after the December 2019 meeting.

A REL Midwest research team, which had developed a framework to assess implementation of NICs in preK–12 education, used the framework to evaluate implementation of the Minnesota ALC NIC. The evaluation framework and its application to the Minnesota ALC NIC are described in this report. Use of the NIC evaluation framework can help other NICs in preK–12 education determine whether they are implementing the essential features of NICs.

The four essential features of a networked improvement community

The processes followed by the Minnesota ALC NIC illustrate the four essential features that characterize NICs (Bryk et al., 2015).

1. NICs are "focused on a well-specified common aim" (Bryk et al., 2015, p. 144) that is measurable and provides a shared focus.

   At the initial meeting of the Minnesota ALC NIC in September 2019, facilitators from the REL Midwest led participants in a series of activities designed to specify a common aim. *By the end of the meeting, participants had specified the following aim: By spring 2021 we will increase the percentage of students who graduate with the necessary habits, skills, and knowledge to achieve postsecondary success.*

   > **Aim statement**
   >
   > By spring 2021 we will increase the percentage of students who graduate with the necessary habits, skills, and knowledge to achieve postsecondary success.

2. NICs are "guided by a deep understanding of the problem, the system that produces the problem, and a theory of improvement relevant to it" (Bryk et al., 2015, p. 144). To develop this deep understanding, participants from different levels of the system engage in exercises to articulate the problem and its causes. For example, they might conduct a root-cause analysis to identify the many factors that contribute to the problem.

   At the September 2019 Minnesota ALC NIC meeting, administrators and teachers from the four ALCs that were then participants of the NIC engaged in a root-cause analysis and identified a primary root cause: *The school environment does not support students' development of the habits, skills, and knowledge needed to graduate and achieve postsecondary success*. They also identified several secondary root causes and then voted to focus on one secondary root cause: *Teachers are not setting clear expectations for student behavior or work*.

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1. Three of the five participating ALCs were in suburban districts, and they were the only ALC in each of these districts. The remaining two ALCs were in urban districts. One of these urban ALCs was one of six in its district, and the other was one of nine in its district. Each participating ALC team was composed of administrators and teachers.

Drawing on the root-cause analysis, participants create a driver diagram that specifies hypotheses about the key factors—or drivers—that are likely to facilitate achieving their aim.

3. NICs are "disciplined by the methods of improvement research to develop, test, and refine interventions" (Bryk et al., 2015, p. 144). Improvement research involves cycles of activities designed to test promising practices—also referred to as change ideas—for addressing challenges (Improvement Science Research Network, 2016). NIC participants use the technique known as Plan-Do-Study-Act cycles to test a change idea that applies the secondary driver.
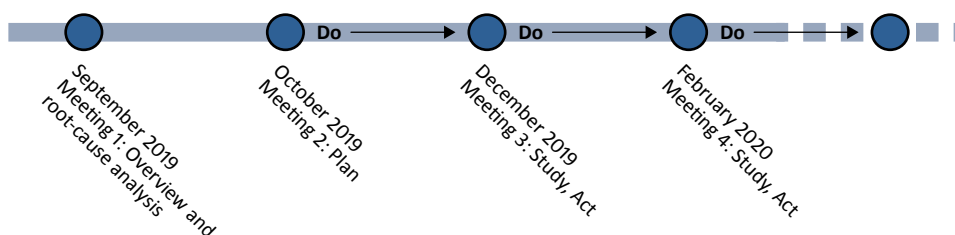
> **Change idea: Student goal setting**
>
> Teachers and students work collaboratively to set goals focused on gaining a deep understanding of concepts and skills. Students complete weekly "exit tickets" to indicate whether they met their goals each day and reflect on their progress for the week, including what they learned and what they could do differently in the future.

At the October 2019 meeting Minnesota ALC NIC participants developed a plan to test a change idea—in this case, a goal-setting activity in which teachers and students would meet to collaboratively set weekly goals. The plans included a timeline, participants' roles and responsibilities, and steps for conducting the test. There were slight variations in the plans across ALC teams. In addition, the whole NIC group identified measures for monitoring the test of the change idea.

4. NICs are "organized to accelerate the diffusion of these interventions out into the field and support their effective integration into varied educational contexts" (Bryk et al., 2015, p. 144). By testing similar interventions/change ideas in different contexts, NIC participants learn what works, for whom, and in what context. They share their findings with one another and thus diffuse successful innovations into the field (Bryk et al., 2015).

Figure 1. Timeline of the Plan-Do-Study-Act cycles of the Minnesota Alternative Learning Center Networked Improvement Community

September 2019 Meeting 1: Overview and root-cause analysis

October 2019 Meeting 2: Plan

December 2019 Meeting 3: Study, Act

February 2020 Meeting 4: Study, Act

Note: The dashed line represents the COVID-19 pandemic period. The Minnesota Alternative Learning Center Networked Improvement Community could not meet because of the pandemic and associated school building closures. As a result, the third Plan-Do-Study-Act cycle, beginning in February 2020, was not completed.

Source: Authors' compilation.

At the December 2019 and February 2020 meetings, Minnesota ALC NIC participants shared their successes, challenges, and findings from data collection and analysis and decided how to adapt their change idea based on this information.

The timeline for the Minnesota ALC NIC is in figure 1, and key continuous improvement activities—referred to as continuous improvement milestones—are in box 2.

Box 2. Continuous improvement milestones

Participants in networked improvement communities (NICs) engage in several key activities during the continuous improvement research process:
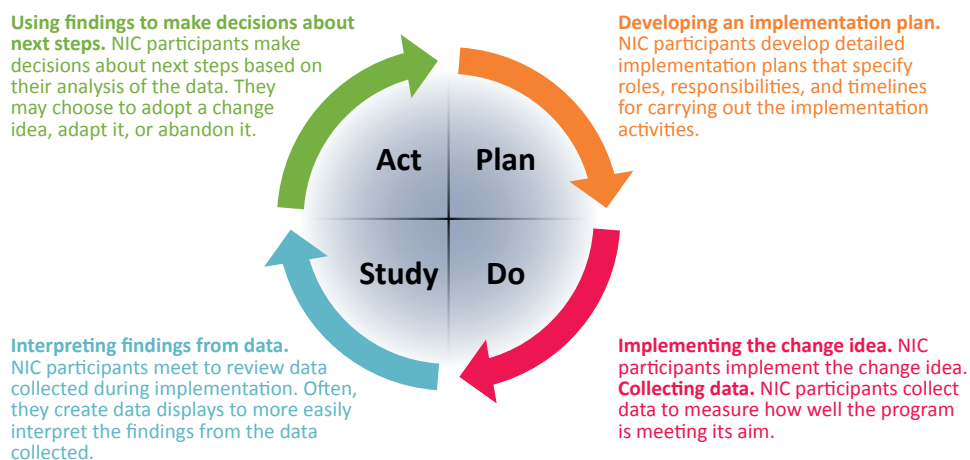
Identifying a problem of practice. Participants identify a problem of practice that will be the focus of improvement efforts.

Conducting a root-cause analysis. Participants identify root causes of the problem of practice. Often, participants use a fishbone diagram to create a visual display of the root causes of the problem. They insert a statement of the problem at the head of the fishbone diagram. Each major "bone" represents hypothesized root causes of the problem. Through discussions, participants further hypothesize about contributors to the root causes.

Developing a driver diagram. Participants develop a visual display of NIC participants' theory of the factors that likely contribute to achieving their aim. Primary drivers contribute directly to achieving the aim, while secondary drivers are components of primary drivers (Institute for Healthcare Improvement, 2020).

Identifying a change idea. Participants identify a practice to be designed, implemented, tested, and redesigned during a Plan-Do-Study-Act cycle. A change idea should target the root causes of the problem.

Deciding how to measure implementation. NIC participants develop a plan for measuring and evaluating whether the change idea is successful.

Using findings to make decisions about next steps. NIC participants make decisions about next steps based on their analysis of the data. They may choose to adopt a change idea, adapt it, or abandon it.

Developing an implementation plan. NIC participants develop detailed implementation plans that specify roles, responsibilities, and timelines for carrying out the implementation activities.

Interpreting findings from data. NIC participants meet to review data collected during implementation. Often, they create data displays to more easily interpret the findings from the data collected.

Implementing the change idea. NIC participants implement the change idea. **Collecting data.** NIC participants collect data to measure how well the program is meeting its aim.

Evaluation tools and findings

REL Midwest researchers developed an approach to conducting a formative NIC evaluation and applied it to the Minnesota ALC NIC. The approach and the tools developed for the Minnesota ALC NIC evaluation are described below. The tools can be adapted to evaluate other NICs in preK–12 education. The report also shares the findings from the Minnesota ALC NIC evaluation to illustrate how to analyze and interpret the data collected using these tools.

Formative evaluation questions

The purpose of a formative evaluation of an NIC is to answer questions about implementation of the NIC (questions 1–5) and its progress toward achieving its aim (question 6). The evaluation tools presented in this report address these six research questions:

1. To what extent are NIC participants engaged with NIC activities? How does this change over time?

2. To what extent and in what respects do NIC participants perceive NIC activities to be relevant and useful? Which aspects of NIC meetings did participants find the most or least helpful and why?

3. To what extent and in what respects are NIC participants gaining knowledge and skills to engage in continuous improvement?

4. To what extent and in what respects are NIC participants completing continuous improvement milestones? How does this change over time? What challenges are associated with completing Plan-Do-Study-Act cycles?

5. To what extent and in what respects are NIC participants coordinating their improvement efforts? How does this change over time? What challenges are associated with coordinating improvement efforts?

6. To what extent did the NIC make progress toward its aim?

Each of these questions is discussed below in a separate section. The evaluation tools used to address each question are listed in table 1. A checklist for carrying out the evaluation using each tool is in appendix A.

Engagement with networked improvement community activities

Engaging a wide range of participants is critical to the success of an NIC in generating and testing useful continuous improvement ideas (Engelbart, 1992). Two indicators of engagement are discussed here: attendance at planned meetings and contributions to improvement milestones.

Table 1. Application of evaluation tools to research questions for evaluation of the Minnesota Alternative Learning Center Networked Improvement Community

Evaluation tool	Research question	Tool description
Attendance logs	1	Logs or some other means are used to track attendance at networked improvement community (NIC) meetings. Minnesota Alternative Learning Center Networked Improvement Community (Minnesota ALC NIC) facilitators created an attendance log and tracked attendance at each NIC meeting.
Postmeeting surveys	2, 3	Postmeeting surveys track participants' perceptions of the usefulness and relevance of NIC meetings, as well as their knowledge and skills in engaging in continuous improvement. Minnesota ALC NIC facilitators administered surveys after whole-group NIC meetings. The evaluation team summarized the findings in memos to provide formative feedback to NIC facilitators (see appendix B for the postmeeting survey and appendix C for a sample memo).
Post–Plan-Do-Study-Act survey	1, 4, 5	The post–Plan-Do-Study-Act survey measures participation in completing continuous improvement milestones and the extent to which participants interacted with staff from other ALCs. The survey also includes open-ended items about the challenges of completing continuous improvement milestones and coordinating improvement efforts. The evaluation team for the Minnesota ALC NIC administered the survey in February 2020 following the second Plan-Do-Study-Act cycle (see appendix D for the Post–Plan-Do-Study-Act cycle survey).
Continuous improvement artifacts	4	Continuous improvement artifacts are the work products created by NIC participants as they engage in activities to complete continuous improvement milestones (see box 2). These artifacts include meeting notes, fishbone and driver diagrams, implementation plans for Plan-Do-Study-Act cycles, data, and analyses. Two members of the evaluation team for the Minnesota ALC NIC examined these artifacts using a set of indicators to measure whether each milestone was completed (see table 3 later in the report). Data on student attendance, summarized in a data summary sheet, provided a leading indicator of progress toward the aim. (See exhibit E2 in appendix E for a data summary sheet template).
Event summaries	5	Event summaries provide additional context for NIC evaluators, filling gaps in understanding when evaluation tools are inconclusive. Minnesota ALC NIC facilitators used a meeting agenda as a template for the event summaries and provided detailed notes on what was accomplished at each meeting. The evaluation team used these notes to clarify how the Minnesota ALC NIC fostered coordination of improvement milestone completion among different ALC teams.

Source: Authors' compilation.

Attendance at planned meetings

For the Minnesota ALC NIC the evaluation team tracked participants' attendance at whole-group meetings. Minnesota ALC NIC facilitators asked each ALC to list the staff who were participating in the NIC, and the facilitators then tracked attendance at each meeting, to determine whether participants were attending as planned.

The evaluation found strong engagement among teachers and administrators in the Minnesota ALC NIC, as measured by attendance over time (table 2). All four participating teachers and administrators from ALC A and ALC D attended all four meetings. ALC B sent a single administrator to the first meeting, in September 2019, but the administrator then invited 19 teachers to attend future meetings, which they did. Three participating teachers and administrators from ALC C attended the September

Data collection tip

Provide an orientation to the goals and methods of the evaluation at the outset of the NIC. The orientation should share the purpose of different data collection efforts, emphasize that the feedback from the evaluation is for improving NIC facilitation, and assure confidentiality. This orientation will help gain NIC participants' buy-in to participate in data collection for the evaluation.

Table 2. Each alternative learning center had 100 percent attendance of its participants at meetings of the Minnesota Alternative Learning Center Networked Improvement Community

Alternative learning center (ALC)	Total number of participants	Number of participants attending meeting			
		September 2019	October 2019	December 2019	February 2020
ALC A	4	4	4	4	4
ALC B	20	1[a]	20	20	20
ALC C[b]	3	3	3	na	na
ALC D	4	4	4	4	4
ALC E[c]	5	na	na	na	5

na is not applicable because the ALC was not participating at the time of the meeting.

a. ALC B sent one administrator to the September 2019 meeting, who then invited 19 teachers to future meetings.
b. ALC C left the NIC after the October 2019 meeting.
c. ALC E joined in December 2019. Facilitators held separate meetings in December 2019 and January 2020 to bring ALC E participants up to speed, and then ALC E joined the whole-group meetings in February 2020.

Source: Authors' analysis of meeting attendance data.

and October meetings, but they subsequently left the NIC because of competing demands at the ALC. ALC E joined the NIC in December 2019. The facilitators held separate meetings in December 2019 and January 2020 to bring ALC E participants up to speed, and all five teachers and administrators from the ALC joined the whole-group meetings in February 2020.

## Contribution to continuous improvement milestones

A second indicator of engagement is the extent to which NIC participants contribute to continuous improvement milestones (see box 2). Because some continuous improvement work occurs outside of meetings, attendance may not be an adequate indicator of contributions to milestones. To capture these external contributions, the evaluation team surveyed Minnesota ALC NIC participants about their engagement in the milestones shortly after the conclusion of each Plan-Do-Study-Act cycle (see question 2 in appendix D).[2] Respondents were asked to rate their level of participation in a particular continuous improvement milestone (for example, identifying a change idea that will influence drivers of improvement) using a four-point scale ranging from "not at all" to "very much so."

Minnesota ALC NIC facilitators administered the survey at the end of the February 2020 meeting, which marked the conclusion of the second Plan-Do-Study-Act cycle. A majority of survey respondents felt that they had participated "moderately" or "very much so" in all the milestones except for two: developing a driver diagram and identifying a change idea (figure 2). This is possibly because these two milestones were carried out during the September 2019 meeting, when only one administrator from ALC B attended and before the 19 teachers from that ALC joined the NIC.

The variation in the percentages of participants who felt that they had participated "moderately" or "very much so" provides formative feedback about the milestones that could use

2. The post–Plan-Do-Study-Act survey can be administered in conjunction with the postmeeting survey rather than as a separate survey.

Figure 2. A majority of survey respondents reported that they participated "moderately" or "very much so" in all continuous improvement milestones except developing a driver diagram and identifying a change idea

Percent reporting that they participated "moderately" or "very much so" in the milestone
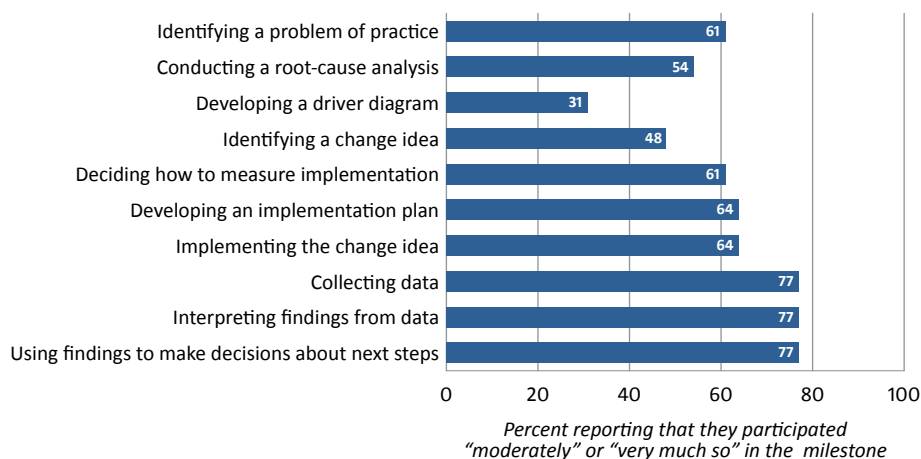
Note: The sample included 27 respondents to the post–Plan-Do-Study-Act survey. The response rate was 82 percent.

Source: Authors' analysis of data from a post–Plan-Do-Study-Act survey administered in February 2020.

stronger support. For example, facilitators and participants in the Minnesota ALC NIC should consider why reported participation in the first four milestones in figure 2 varied so widely, from 31 percent to 61 percent, despite the fact that the NIC addressed all four of them during the September 2019 meeting.

These findings are based on retrospective ratings that relied on survey respondents' recall of their participation during the second Plan-Do-Study-Act cycle, which began two months prior to the survey. To limit recall bias, facilitators should include a field to record contributor names on all NIC artifacts, which would allow NIC evaluators to determine participation in each continuous improvement milestone at the time of its completion.

Relevance and usefulness of the networked improvement community

After each whole-group meeting Minnesota ALC NIC participants completed a postmeeting survey that asked attendees to rate two statements about the relevance and usefulness of

the meetings. The evaluation team used the Institute of Education Sciences' Stakeholder Feedback Survey, created for participants in REL trainings, coaching sessions, and events to provide feedback for use in improving programs (see appendix B). Evaluators can assess responses to the postmeeting survey and compare them over time to assess changes in the relevance and usefulness of meetings and to examine variation across NIC teams.

Analysis tip

Convert data from postmeeting surveys into figures to provide timely feedback on participants' perceptions of NIC meetings. Displaying findings from each session side by side is useful in determining how perceptions change over time.

The postmeeting survey was administered in paper and pencil format at the end of the September, October, and December 2019 meetings. Response rates for meeting attendees were 100 percent in the September meeting, 55 percent in the October meeting, and 43 percent in the December meeting. Administering surveys at a meeting can result in higher response rates and reduce recall bias. In this case the evaluation team hypothesized that the response rate declined in October and December because those meetings were held after school (rather than during school, as in September), and many participants had to leave immediately after the meeting.[3]

Minnesota ALC NIC participants rated their agreement with the following statements about relevance and usefulness:

- The coaching/consultation offered by the REL was relevant to a particular issue facing my agency or organization.

- The benefits from this project were worth the time and resources my agency or organization invested to participate.

Nearly all NIC participants who responded to the survey found the meetings to be relevant and useful to their organization (figure 3). Across all three meetings at least 90 percent of respondents "agreed" or "strongly agreed" that the coaching was relevant to a particular issue facing their organization. And at least 82 percent of respondents "agreed" or "strongly agreed" that the benefits were worth the time and resources that their agency or organization invested to participate.

Figure 3. Most meeting attendees in the Minnesota Alternative Learning Center Networked Improvement Community agreed or strongly agreed that the meetings were relevant and useful to their organization

■ September 2019 ■ October 2019 ■ December 2019

Percent responding "agree" or "strongly agree"
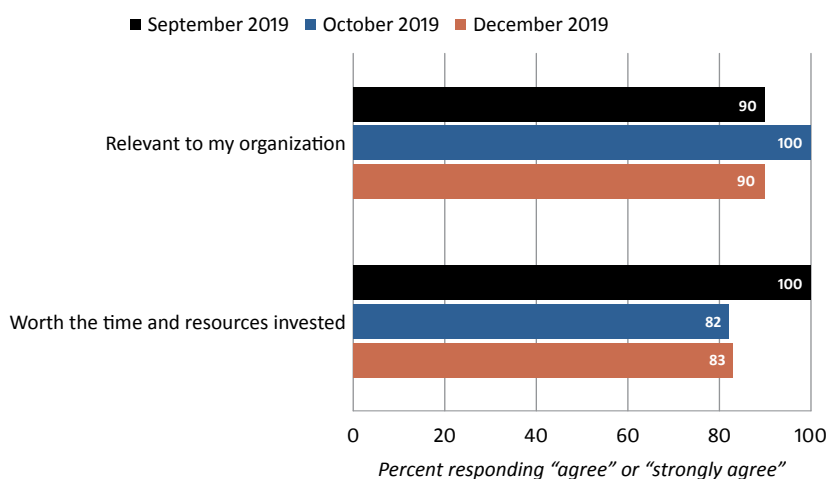
Note: The sample included 12 respondents in both September and December and 17 respondents in October. The response rate was 100 percent for September, 55 percent for October, and 43 percent for December. Participants rated items using a four-point agree/disagree scale.

Source: Authors' analysis of data from postmeeting surveys administered in September 2019, October 2019, and December 2019.

3. The NIC facilitators suggested this explanation to the authors in a personal communication.

The postmeeting survey also included two open-ended items that addressed the usefulness of the NIC by asking respondents to describe which aspects of the meeting were most helpful and which were least helpful. (A third open-ended item asked for suggestions for improving the meeting.) The evaluation team analyzed the responses using an inductive approach that assigned each comment to a category (for example, opportunities for teamwork, strong facilitation). The team totaled the comments in each category to quantify the prevalence of each theme.

When participants were asked what aspects of the meetings were most helpful and why, their comments clustered into three broad themes across the three meetings:

- *Team discussions.* In October and December 2019 respondents most frequently identified ALC team discussions and opportunities to collaborate with other colleagues as most helpful. For example, in December, one respondent identified "discussion in small groups to process ideas" as the most helpful aspect of the meeting.

- *Development of relationships.* In September 2019 three respondents noted the supportiveness of the coaches and shared their appreciation for the opportunity to work with them. Three respondents also reported that encountering participants of other ALCs was useful, while one respondent appreciated the opportunity to connect with peers in the respondent's ALC.

- *Facilitation of continuous improvement.* For all three meetings respondents mentioned facilitation as a helpful aspect. In September 2019 five respondents shared that they found specific techniques used by the facilitators to be helpful. One respondent reported, "I love how they broke items down and then built them back up so we get the full understanding of how to improve our schools." In October two respondents mentioned the importance of modeling. One respondent stated, "Modeling the process and guiding us through the plan was very helpful and good models for students." In December four respondents mentioned that the facilitators helped them reflect on what was working and what needed to change.

Fewer respondents responded to questions about aspects of the coaching that were least helpful and how the coaching could be improved for the future. These responses were more diverse and did not cluster into themes across multiple respondents.

Overall, the responses indicated that respondents viewed ALC team discussions and opportunities to develop relationships as critical to the usefulness of the Minnesota ALC NIC. These themes are consistent with the purpose of NICs, which is to foster a connected approach to improvement among individuals working within a system.

Knowledge and skills for engaging in continuous improvement

The evaluation team used self-reported data from the postmeeting surveys to assess Minnesota ALC NIC participants' knowledge and skills for engaging in continuous improvement. The postmeeting surveys asked NIC participants to rate their agreement with statements

about whether the coaching session increased their understanding of and skill in specific aspects of contin- uous improvement covered during each session. For example, after the September 2019 meeting the survey asked participants about their knowledge and skills in conducting a root-cause analysis and developing a driver diagram.

Beginning with the item stem, "The coaching/consultation offered by the REL," the survey included four item choices:

> **Data collection tip**
>
> To ensure that items are comparable across meetings, use generic terms and refer to "the topic" or "this issue." It is helpful to specify the topic addressed by the session in the introduction to the survey to focus respondents' attention on the same topic when they are rating items.

- Increased my understanding of the topic.

- Increased my understanding of the research and data available to examine this issue.

- Increased my understanding of the ways research and data can be used to investigate this issue.

- Increased my capacity to use research and data to solve problems in my agency or organization.

Nearly all respondents "agreed" or "strongly agreed" that participating in the September, October, and December 2019 meetings increased their understanding of the topic (figure 4). For all other items most respondents "agreed" or "strongly agreed" that participating in the September meeting increased their knowledge and skills, but a higher percentage of respondents "agreed" or "strongly agreed" that participating in the October and December meetings increased their knowledge and skills:
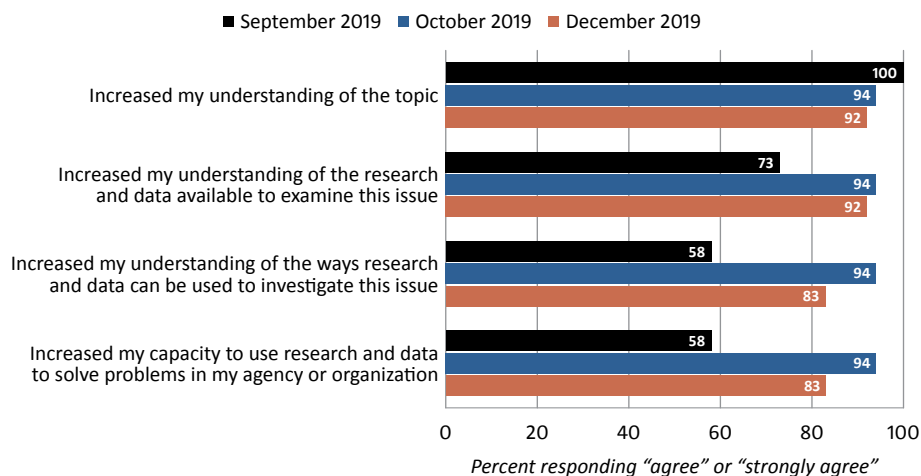
- More than 90 percent of respondents who participated in the October and December meetings "agreed" or "strongly agreed" that participating in the meetings increased their understanding of the research and data available to examine the issue compared with 73 percent of respondents who participated in the September meeting.

- More than 80 percent of respondents who participated in the October and December meetings "agreed" or "strongly agreed" that participating in the meeting increased their understanding of the ways research and data can be used to investigate the issue com- pared with 58 percent of respondents who participated in the September meeting.

- More than 80 percent of respondents who participated in the October and December meetings "agreed" or "strongly agreed" that participating in the meeting increased their capacity to use research or data to solve problems compared with 58 percent of respon- dents who participated in the September meeting.

One possible reason for the lower levels of agreement in September is that the questions refer to the entire coaching opportunity rather than to a specific meeting. Therefore, respondents at the October and December meetings were reflecting on the cumulative experience of the

Figure 4. In October and December 2019 more than 80 percent of meeting participants responded that the networked improvement community meeting increased their knowledge and skills

Note: The sample included 12 respondents in both September and December and 17 in October. The response rate was 100 percent for September, 55 percent for October, and 43 percent for December.

Source: Authors' analysis of data from postmeeting surveys administered in September 2019, October 2019, and December 2019.

Minnesota ALC NIC rather than a single session. It is also possible that because the September meeting focused on the earlier milestones in the continuous improvement process, NIC participants had not yet gained experience with working on milestones related to research and data.

Completing continuous improvement milestones as intended

The continuous improvement process generates artifacts that can be used to assess whether NIC participants are completing continuous improvement milestones, thus indicating that they are making progress toward their aim. Examples of artifacts are implementation plans, data collection forms, and data summaries. However, these artifacts are not always in a format that lends itself to analysis. To assist the analysis, evaluators can coordinate with NIC facilitators to ensure that artifacts align to continuous improvement milestones (see box 2). For example, a completed driver diagram can be used as an artifact for developing a driver diagram milestone. Key indicators for this milestone are that the driver diagram has a measurable aim and specifies at least one driver of the aim. For the Minnesota ALC NIC each continuous improvement milestone, the corresponding artifact, and the indicators of milestone completion are displayed in table 3.

Analysis tip

It is useful to present findings in a crosswalk of teams by milestone (table 4). The unit of analysis is a team of NIC participants working together to complete a Plan-Do-Study-Act cycle. Sometimes an NIC has multiple teams (for example, teams of teachers within an ALC). In the Minnesota ALC NIC, three ALCs had a single schoolwide team, and one ALC had three teams, one for each department.

Table 3. Continuous improvement milestones, artifacts, and indicators, with examples from the Minnesota Alternative Learning Center Networked Improvement Community (Minnesota ALC NIC)

Milestone	Artifact	Level[a]	Indicator of completion/Minnesota ALC NIC example
Identifying a problem of practice	Meeting notes	NIC	Identification of one problem of practice as the focus of the NIC. *Example:* "Many youth are not successfully developing the habits, skills, and knowledge needed to graduate and achieve postsecondary success."
Conducting a root-cause analysis	Fishbone diagram	NIC	Identification of at least one root cause. *Example:* School environment; student attitudes toward school.
Developing a driver diagram	Driver diagram	NIC	Agreement on a specific and measurable aim. Identification of at least one driver of the aim. *Examples:* • *Specific and measurable aim:* By spring 2021 we will increase the percentage of students who graduate with the necessary habits, skills, and knowledge to achieve postsecondary success by [specified] percent. • *Driver of the aim:* Improved school environment (primary driver); teachers set clear expectations for behavior and work (secondary driver).
Identifying a change idea	Meeting notes, presentation deck	NIC	A description of a specific change idea that is related to a driver of the aim. *Example:* Teachers will work with each student to set goals and will support students in monitoring their goals.
Deciding how to measure implementation	Meeting notes, presentation deck	NIC	Specification of a measure of the driver to quantify whether the change idea has influenced the driver. *Example:* Percentage of students who are setting and achieving goals.
Developing an implementation plan	Implementation plan	ALC team	Identification of individuals who will participate in implementation. Establishment of a timeline for implementation. Identification of predicted outcomes. *Examples:* • *Individuals who will participate in implementation:* Five students not on track to earn credit. • *Timeline:* Students do goal check-ins for eight days. • *Predicted outcomes:* 80 percent of participating students will set a goal, 50 percent will accomplish goal.
Collecting data	Data summary	ALC team	Compilation of data for analysis. *Example:* Teams compile number of students setting and accomplishing a goal.
Interpreting findings from data	Data summary	ALC team	Summary of data that include a test of the predictions. *Example:* Teams compare predicted and actual goal setting and accomplishment by students.
Using findings to make decisions about next steps	Data summary	ALC team	A decision about next steps (adopt, adapt, or abandon the change idea). *Example:* Turn paper goal sheet into a digital form.

NIC is networked improvement community; ALC is alternative learning center.

a. Level indicates whether the NIC completed the milestone as a whole group or separately within each ALC.

Source: Authors' compilation.

The evaluation team for the Minnesota ALC NIC summarized the completion of milestones for the six ALCs participating in the December 2019 meeting.[4] The evaluation team focused on the second Plan-Do-Study-Act cycle (December 2019–February 2020) because the facilitators had used the first cycle for training. Ideally, evaluators would examine artifact data over multiple cycles, but subsequent Plan-Do-Study-Act cycles for the Minnesota ALC NIC were canceled because schools closed their buildings in March 2020 in response to the COVID-19 pandemic. The meeting notes indicated that the NIC worked on the first five milestones in table 3 as a group and the next four milestones as individual ALCs.

---

4. ALCs A, D, and E had one team each. ALC B divided into three teams based on department. ALC C had left the NIC before the start of the second Plan-Do-Study-Act cycle.

The artifacts and indicators described in table 3 showed that the NIC—as a whole group—completed four of the five initial milestones. The meeting notes indicated that the Minnesota ALC NIC had identified a problem of practice, but the milestone of developing a driver diagram was only partially completed. The aim statement, "By spring 2021 we will increase the percentage of students who graduate with the necessary habits, skills and knowledge to achieve postsecondary success by ____ %," included a placeholder that was never filled in with a specific percentage. Without specifying the percentage, the aim was not measurable and thus could not be used as an indicator of completion.

To determine the extent to which individual ALC teams completed the final four milestones in table 3, the evaluation team examined two main artifacts (see appendix E for artifact templates):

- An **implementation plan** written on chart paper by each ALC team working on a Plan-Do-Study-Act cycle. The format of the implementation plan was consistent across teams and included sections describing which students would participate in the change idea (setting and monitoring goals), when and how many times the team would implement the change idea, predictions for the outcomes of the change idea, preparation steps, and a description of the steps involved in implementing the change idea.

- A **data summary sheet** with fields corresponding to the number of students setting and accomplishing goals, frequency of teacher/student reflections on goals, and student attendance. The data summary sheet also included fields for interpreting the data (such as whether predictions were accurate) and for considering next steps.

Five of the six ALC teams completed the data collection and interpretation of findings milestones (table 4). Four of the six ALC teams developed an implementation plan and used findings to make decisions about next steps.

Table 4. Most participating teams in the Minnesota Alternative Learning Center Networked Improvement Community completed all continuous improvement milestones

Alternative learning center team[a]	Continuous improvement milestone completed			
	Developing an implementation plan	Collecting data	Interpreting findings from data	Using findings to make decisions about next steps
1	Yes	Yes	Yes	Yes
2	Yes	Yes	Yes	No
3	Yes	Yes	Yes	Yes
4	Yes	Yes	Yes	Yes
5	No	Yes	Yes	Yes
6	No	No	No	No
Total "yes"	4	5	5	4

a. In the Minnesota Alternative Learning Center Networked Improvement Community, alternative learning centers (ALCs) A, D, and E had one team each; ALC B had three teams based on department; and ALC C left before the start of the second Plan-Do-Study-Act cycle, the focus of the evaluation.

Source: Authors' analysis of data from Plan-Do-Study-Act cycle artifacts produced between December 2019 and February 2020.

The February 2020 post–Plan-Do-Study-Act survey included an open-ended item asking respondents to describe the challenges they or their ALC team encountered in completing the Plan-Do-Study-Act cycle. Respondents listed several challenges, all of which related to implementation of the change idea rather than to the continuous improvement process for studying the change idea. Teachers noted low student attendance (12 teachers), difficulty explaining goal setting to students (6 teachers), and trouble finding the time to set goals (6 teachers) as problems encountered in implementing goal setting.

> ## Analysis tip
>
> To analyze data on challenges in completing milestones, create a set of codes, each corresponding to a type of challenge (for example, could not complete change idea, data analysis was too time-consuming, could not agree on a prediction). Summing the number of respondents reporting each challenge will help NIC facilitators prioritize which challenge to address.

Coordinating continuous improvement efforts

An essential feature of NICs is that their participants coordinate their efforts to accelerate the design, implementation, testing, and redesign of change ideas. By testing similar change ideas in different contexts, NIC participants learn what works, for whom, and in what context. The NIC evaluation team used the February 2020 post–Plan-Do-Study-Act survey to assess the coordination of improvement efforts in the Minnesota ALC NIC. Respondents rated their agreement with six statements about their interactions with other ALCs. The statements were related to sharing Plan-Do-Study-Act cycle findings (two statements), discussing improvements efforts, sharing resources related to improvement, learning from other ALCs' findings, and benefiting from discussions with other ALCs (figure 5).

Figure 5. Fewer than half of survey respondents reported coordinating continuous improvement efforts with other alternative learning center teams in the Minnesota Alternative Learning Center Networked Improvement Community

Percent agreeing "moderately" or "very much so" with statement
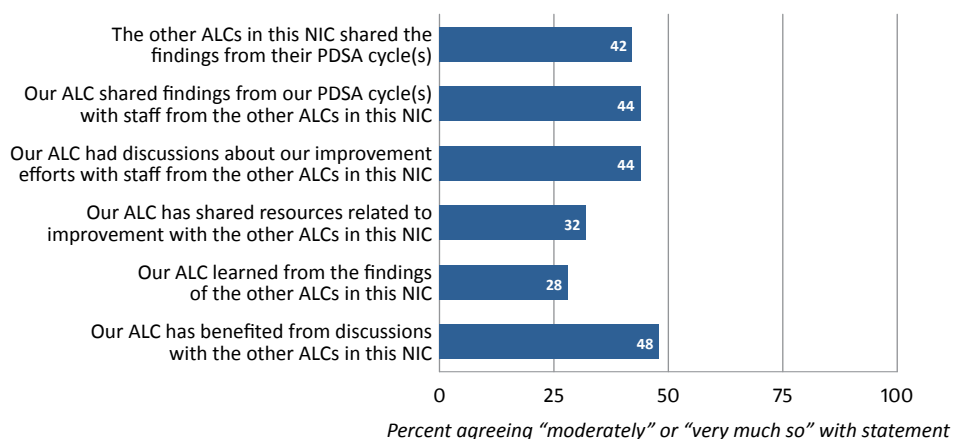
NIC is networked improvement community; PDSA is Plan-Do-Study-Act cycle.

Note: The sample included 26 respondents to the February 2020 post–Plan-Do-Study-Act survey. The response rate was 79 percent.

Source: Authors' analysis of data from a post–Plan-Do-Study-Act survey administered in February 2020.

Minnesota ALC NIC participants' responses to the post–Plan-Do-Study-Act survey indicated that networking among the ALC teams occurred among a minority of participants during the second Plan-Do-Study-Act cycle. Fewer than one-third of the 26 survey respondents indicated that they "moderately" or "very much so" shared resources related to continuous improvement efforts with the other ALC teams in the NIC (32 percent) or learned from the findings of the other ALC teams in the NIC (28 percent; see figure 5). Fewer than half of respondents indicated that other ALC teams in the NIC "moderately" or "very much so" shared findings from their Plan-Do-Study-Act cycles (42 percent) or that their ALC team "moderately" or "very much so" shared findings from their Plan-Do-Study-Act cycles with other ALC teams in the NIC (44 percent), had discussions about their improvement efforts with other ALC teams (44 percent), or benefited from discussions with other ALC teams (48 percent).

The post–Plan-Do-Study-Act survey included an open-ended item asking respondents about the challenges their ALC team encountered when coordinating efforts with the other ALC teams participating in the NIC. Few respondents, however, described specific challenges, and five respondents reported that they did not work with other ALC teams.

Written summaries of NIC meetings can provide additional context to fill in gaps in understanding arising from nonresponses. For example, notes added to the event summary completed by the facilitator after the February 2020 meeting provided additional insight into the extent to which Minnesota ALC NIC participants were coordinating continuous improvement efforts:

> *Facilitators circulated and helped groups identify changes to their approach, always reflecting on what the data they gathered revealed. [ALC E] has only completed one cycle of implementation. The facilitators spent time helping them review their data and make adjustments to their implementation plan. [They] identified that they need reminders to implement and would like to move to a longer trial period to catch students who are chronically absent. They are targeting students who were not regularly connecting with adults in the school. They will also be using the GOALS form created by [ALC A] to increase student reflection in the activity. [ALC A] decided to add the goal of getting students to set mastery goals this next cycle. Several of the [ALC B] teams discussed how they would add "fun" elements to the goal-setting activity, such as celebrations for meeting a certain number of goals and improving the environment in which they set goals with students. [ALC D] decided to adopt the modified goals from [ALC B] and to lengthen the number of days in each trial cycle to catch students who have attendance problems.*

This event summary shows that as ALC teams progressed through Plan-Do-Study-Act cycles, they modified their change idea based on the experiences of other teams. This finding is evidence of coordinating continuous improvement efforts. It also illustrates the importance of supplementing survey data with other sources of information about coordinating efforts. At the time of survey completion, NIC participants might be unable to recall these exchanges or might not realize that they are examples of coordinating continuous improvement efforts.

Another method for examining the extent of networking is for NIC teams to record each change idea that they test for the duration of the NIC and document the source for the change idea. Teams could log their reason for choosing the change idea and note whether they got the idea from another team. This log will allow the NIC team and the evaluation team to observe how ideas change in response to testing.

Although social network analysis was not used in this evaluation, other evaluators have used it to map connections among different NIC teams (Feldstein & Sherer, 2018). Existing data, such as data from an online community of practice, can be used to capture the nature and frequency of communications among NIC participants.[5] In the absence of such data, surveys can inquire about the extent of connections among NIC teams. Software packages are available to generate maps of network connections that identify central actors in the NIC and highlight any potentially problematic isolation of NIC teams (Feldstein & Sherer, 2018). Social network analysis, however, requires specialized skills that make it more challenging to use than the tools presented in this report.

Progress toward the aim

While the preceding questions guiding the evaluation of the Minnesota ALC NIC focused on implementation of the NIC, the final evaluation question focuses on outcomes: Did the NIC make progress toward attaining its stated aim? One challenge in evaluating progress is that the aim of an NIC is often too distal to be of use for continuous improvement. Aims usually relate to policy-critical outcomes such as teacher retention, graduation rates, and performance on annual tests. Data on these outcomes are typically reported annually, which does not allow for multiple rounds of testing and feedback during a school year. Therefore, to evaluate an NIC's progress toward its aim, it is helpful to measure progress relative to the identified drivers of the aim. The change idea exerts a direct influence on these drivers, which in turn influence the aim.

The Minnesota ALC NIC expected increased student goal setting to lead to higher student attendance (as students are more engaged), to higher course completion rates, and ultimately to higher graduation rates. For this reason the NIC collected data on student attendance during the testing of the change idea.

Prior to implementing the change idea, it is important to establish a baseline to serve as a comparison. Because the change idea in the Minnesota ALC NIC was implemented over a two-week period, teachers could calculate a baseline by determining attendance rates for one or more two-week periods preceding the introduction of the change idea. The more data points collected prior to and after the introduction of the change idea, the clearer patterns will be. A hypothetical example in figure 6 illustrates trends in attendance data collected by five teachers.[6]

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5. This type of analysis was not possible for the Minnesota ALC NIC evaluation because data on individual connections were not available.
6. Because of school building closures related to the COVID-19 pandemic, teachers participating in the Minnesota ALC NIC were not able to collect sufficient attendance data to evaluate progress toward the aim

This visualization of the simulated dataset reveals a trend toward increased attendance in the three weeks following the introduction of the change idea. Visualizing the data in this way is useful for low-stakes decisions about the progress of an NIC. When higher precision is required, quantitative approaches, such as an interrupted time series analyses, are more appropriate for conducting an analysis.

Figure 6. Hypothetical data illustrating an average increase in student attendance following the introduction of the change idea
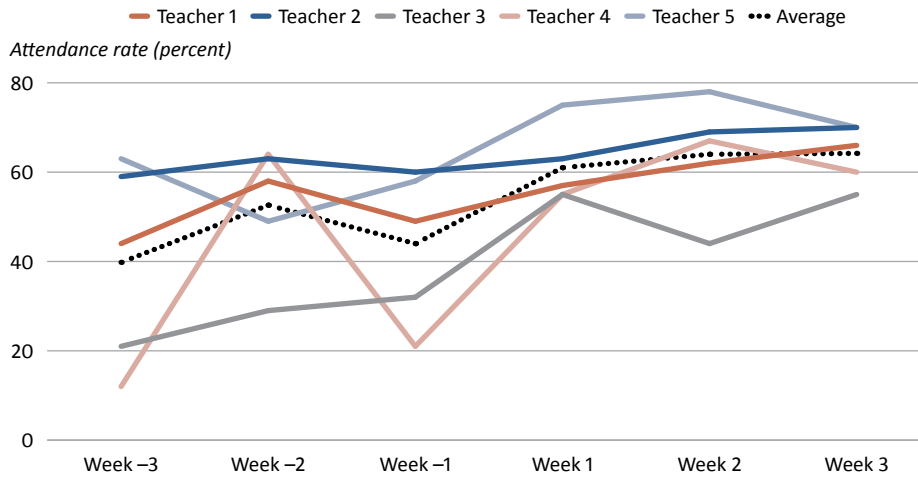
Source: Authors' analysis of hypothetical data.

IMPLICATIONS AND LIMITATIONS

The evaluation of implementation of the Minnesota ALC NIC has several implications and limitations:

- Attendance data and surveys of member involvement with continuous improvement milestones were used to assess engagement in the Minnesota ALC NIC, which was found to be strong. Attendance data were easy to obtain, as NIC facilitators recorded the names of everyone who attended each session. Findings from the February 2020 post–Plan-Do-Study-Act survey indicated weaker engagement with some milestones than others. A limitation of the survey is that it relied on the recollections of NIC participants. In the future it would be useful for NIC participants to record participation in each continuous improvement milestone as they work on it.

- Participants considered the Minnesota ALC NIC to be both relevant and useful, as indicated by their responses to postmeeting surveys. The most frequent reasons given were the opportunities to work in ALC teams and to develop relationships with staff from other ALCs. Also, participants perceived the quality of the facilitators to be critical to the usefulness of the NIC. The low response rates to some of the postmeeting surveys, however, made it difficult to compare survey results across meetings. To overcome this impediment, facilitators could add completing the survey to the meeting agenda and provide incentives for completing the survey.

- The percentage of attendees agreeing that the NIC increased their knowledge and skills grew over time, although the low response rates on the later postmeeting surveys limited comparisons across meetings. Further, the survey questions about knowledge and skills referred to the coaching/consultation experience overall and not to a particular session. While this strategy is useful to understand how participants perceive the NIC process as a whole, it makes it is more difficult to compare perceptions across sessions.

- Artifacts from the Minnesota ALC NIC enabled the evaluation team to conclude that most of the ALC teams completed most of the continuous improvement milestones. The ALC teams used a consistent format for their implementation plans and data summaries, which facilitated the review. But as complete data were available for only one of the three Plan-Do-Study-Act cycles, the evaluation team could not determine how ALC teams modified their change idea over time in response to their findings.

- While the February 2020 post–Plan-Do-Study-Act survey indicated that sharing was infrequent among ALC teams in the NIC, contemporaneous meeting notes recorded specific instances of networking among teams. It is possible that the networking involved a limited number of participants. In the future, ALC teams could be asked to keep a log of their change ideas and record whether they adopted ideas from other teams, to facilitate evaluation.

The evaluation findings are limited in other respects as well:

- The changing composition of the Minnesota ALC NIC affected the evaluation. An ALC that joined the NIC two months late required one-on-one workshops to catch up with the others. Because this ALC received a different level of support than the others received, the evaluation team analyzed two different versions of NIC supports at the same time.

- The evaluation team had intended to administer two additional post–Plan-Do-Study-Act cycle surveys in spring 2020, but the work of the NIC was interrupted by the school building closures in response to the COVID-19 pandemic. This precluded any evaluation of changes over time in completion of milestones and coordination of continuous improvement efforts, among other areas.

- Because of the limited data available, the evaluation team could not examine the progress of the Minnesota ALC NIC toward its aim or drivers.

The tools described and presented in this report can be used and adapted as needed to evaluate implementation of a range of NICs in preK–12 education settings. It is important for NIC facilitators to consider ways to incorporate data collection into the NIC, such as through attendance records, surveys, and other artifacts. Evaluation activities should be an integral part of the overall planning of the NIC. The planning should specify the timing of data collection related to NIC events, which participants will support data collection, and how the NIC teams will document their continuous improvement activities in ways that can support analysis. The evaluation planning checklist (see appendix A) includes specific steps for coordinating the evaluation with overall NIC facilitation.

Appendix A. Evaluation planning checklist

Evaluators of networked improvement communities (NICs) can use this checklist for planning the evaluation. For most data sources an additional planning step is to determine a protocol for the secure transfer of data to the evaluation team.

Attendance logs
- ☐ Create a list of NIC participants that includes alternative learning center (ALC) affiliations and contact information.
- ☐ Create an attendance tracking sheet for in-person meetings.
- ☐ Determine who will be responsible for tracking attendance.

Postmeeting survey
- ☐ Obtain a schedule of meetings from NIC facilitators.
- ☐ Review goals of each NIC meeting and update the survey accordingly.
- ☐ Determine who will administer the survey and the mode of administration (paper and pencil or online).
- ☐ If the survey will be administered online, program it into the online survey platform. If the survey will be administered by paper and pencil, ensure that there are enough copies to distribute at the meeting.

Post–Plan-Do-Study-Act survey
- ☐ Obtain a schedule of the Plan-Do-Study-Act cycles, and schedule the survey for the conclusion of each cycle.
- ☐ Determine who will administer the survey and the mode of administration (paper and pencil or online).
- ☐ If the survey will be administered online, program it into the online survey platform. If the survey will be administered by paper and pencil, ensure that there are enough copies to distribute at the meeting.

Continuous improvement artifacts
- ☐ Get information about the team structure within ALCs. Are there multiple teams within each ALC? Who belongs to which team? Each team conducting the Plan-Do-Study-Act cycles should generate its own set of continuous improvement artifacts.
- ☐ Determine how the Plan-Do-Study-Act artifacts will be archived. Where will they be saved? Who will be responsible for archiving them?
- ☐ Communicate with NIC participants about expectations for completing the artifacts.
- ☐ Encourage teams to annotate artifacts in the following ways:
  - ☐ Record which participants participated in the creation of each artifact.
  - ☐ For the Plan-Do-Study-Act planning form, record the source for the change idea.
- ☐ Determine how the Plan-Do-Study-Act artifacts will be archived. Where will they be saved? Who will be responsible for archiving them?

Event summaries
- ☐ Designate a notetaker for each meeting.
- ☐ Record notes in the agenda to annotate each component of the meeting.

APPENDIX B. POSTMEETING SURVEY

The items for the postmeeting survey were drawn from the Institute of Education Sciences' Stakeholder Feedback Survey, a survey created to provide feedback on program improvement for Regional Educational Laboratory (REL) trainings, coaching sessions, and events. Using the postmeeting survey, evaluators can analyze data over time to assess changes in the relevance and usefulness of meetings and to examine variation among alternative learning center (ALC) teams.

Minnesota Alternative Learning Center Networked Improvement Community: Postmeeting survey

1. For the questions below, please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly agree
a. The coaching/consultation offered by the REL was relevant to a particular issue facing my agency or organization	☐	☐	☐	☐
b. The coaching/consultation offered by the REL increased my understanding of the topic	☐	☐	☐	☐
c. The coaching/consultation offered by the REL increased my understanding of the research and data available to examine this issue	☐	☐	☐	☐
d. The coaching/consultation offered by the REL increased my awareness of available research and data on this topic or issue	☐	☐	☐	☐
e. The coaching/consultation offered by the REL increased my understanding of the ways research and data can be used to investigate this issue	☐	☐	☐	☐
f. The coaching/consultation offered by the REL increased my capacity to use research and data to solve problems in my agency or organization	☐	☐	☐	☐
g. I would likely participate in additional support activities offered by the REL	☐	☐	☐	☐
h. I understood my role and the expectations for my participation in this project	☐	☐	☐	☐
i. My agency or organization received the appropriate level of support from the REL to implement this project	☐	☐	☐	☐
j. The benefits from this project were worth the time and resources my agency or organization invested to participate	☐	☐	☐	☐

2. What aspects of the coaching/consultation were most helpful and why?

_____

_____

_____

3. What aspects of the coaching/consultation were least helpful and why?

_____

_____

_____

4. What part of this coaching/consultation would you suggest changing to make it better for future participants?

_____

_____

_____

Appendix C. Participant feedback memo example

On September 9 and 10, 2019, the Regional Educational Laboratory (REL) Midwest, in collaboration with the Minnesota Department of Education, held a two-day coaching session for 12 teachers and administrators from four Minnesota alternative learning centers (ALCs). The participants were from the Minnesota Alternative Learning Center Networked Improvement Community (Minnesota ALC NIC), a collaborative research partnership focused on improving the implementation of competency-based approaches to credit recovery in Minnesota ALCs through iterative cycles of design, implementation, and testing. Ultimately, the participants hope to increase graduation rates for ALC students.

During the first day of coaching, the REL Midwest project team facilitated a root-cause analysis to identify specific, actionable challenges to implementing competency-based approaches to credit recovery and to determine the root causes of those challenges. Participants in the networked improvement community (NIC) came to a consensus about the challenge they would focus on during the first year of the NIC. That challenge was: "Many youth are not successfully developing the habits, skills, and knowledge needed to graduate and achieve postsecondary success."

During the second day of the session, REL Midwest coaches led participants in developing a theory of action related to the challenge. First, participants identified the following aim: "By spring 2021 we will increase the percentage of students who graduate with the necessary habits, skills, and knowledge to achieve postsecondary success." Next, they identified the primary drivers that would help them achieve that aim and chose to focus on improving the school environment to support students' development of the habits, skills, and knowledge needed to graduate and achieve postsecondary success. They identified four secondary drivers of this primary driver: improving the school's physical environment, providing accommodations or differentiated instruction, scaffolding learning opportunities, and setting clear expectations for student behavior and work. Participants voted to focus on setting clear expectations for students.

The Minnesota Department of Education administered an anonymous survey to collect feedback from NIC participants about their perceptions of the meeting's usefulness and relevance. The Minnesota Department of Education returned the completed surveys for analysis by a separate group from REL Midwest, the REL Midwest evaluation team. This memo shares the findings from the evaluation team's analysis of the survey data.

Focus of feedback survey

The feedback survey included 10 statements about the coaching session and asked participants to express their agreement with each (see appendix B for the full survey). The statements were related to the benefits, relevance, and usefulness of the coaching and to the support and expectations for participation in the coaching. Participants were also asked

open-ended questions about the most helpful and the least helpful aspects of the coaching session, as well as how the coaching session could be improved for future participants.

Ratings of the coaching session

All 12 participants in the coaching session completed the survey. Participants expressed strongest agreement with five statements related to relevance, increased knowledge of topic, expectations for participation, support for participation, and usefulness (expressed as "benefits of participation"):

- The coaching/consultation offered by the REL was relevant to a particular issue facing my agency/organization.

- The coaching/consultation offered by the REL increased my understanding of the topic.

- I understood my role and the expectations for my participation in this project.

- My agency or organization received the appropriate level of support from the REL to implement the project.

- The benefits from this project were worth the time and resources my agency or organization invested to participate in the project.

Participants expressed weaker agreement with three statements related to the coaching's influence on their ability to use research and data:

- The coaching/consultation offered by the REL increased my understanding of the research and data available to examine this issue.

- The coaching/consultation offered by the REL increased my understanding of the ways research and data can be used to investigate this issue.

- The coaching/consultation increased my capacity to use research and data to solve problems in my agency or organization.

Individual participants responded as follows:

- **Relevance.** Eight participants "strongly agreed" and three participants "agreed" that the coaching was relevant to a particular issue facing their organization. One participant selected "not applicable."

- **Usefulness.** Eight participants "strongly agreed" and four participants "agreed" that the benefits from this project were worth the time and resources that their organization invested to participate.

- **Knowledge and skills.** Participants responded to five statements related to the coaching's influence on their knowledge and skills:

  ○ Three participants "strongly agreed" and five participants "agreed" that the coaching offered by the REL increased their awareness of the research and data available on this issue. Four participants selected "not applicable."

  ○ Six participants "strongly agreed" and six participants "agreed" that the coaching offered by the REL increased their understanding of the issue.

  ○ Two participants "strongly agreed" and six participants "agreed" that the coaching offered by the REL increased their understanding of the research and data available to examine this issue. Three participants selected "not applicable," and one did not respond to this item.

  ○ Two participants "strongly agreed," five participants "agreed," and one participant "disagreed" that the coaching offered by the REL increased their understanding of the ways research and data can be used to investigate this issue. Four participants selected "not applicable."

  ○ Three participants "strongly agreed," four participants "agreed," and three participants "disagreed" that the coaching offered by the REL increased their capacity to use research and data to solve problems in their organization. Two participants selected "not applicable."

- **Satisfaction.** Five participants "strongly agreed," six participants "agreed," and one participant "disagreed" that they would likely participate in additional support activities offered by the REL.

- **Expectations for participation.** Five participants "strongly agreed" and seven participants "agreed" that they understood their role and the expectations for their participation in the project.

- **Support for participation.** Six participants "strongly agreed" and four participants "agreed" that their organization received the appropriate level of support from the REL to implement this project. Two participants selected "not applicable."

Open-ended responses

- When asked what aspects of the coaching were most helpful and why, participants offered the following responses:

  ○ **Developing relationships.** Three participants noted the supportiveness of the NIC coaches and shared their appreciation for the opportunity to work with them. Three participants reported that the opportunity to meet participants from other ALCs was useful, and one participant shared appreciation for the opportunity to connect with peers in their ALC.

- **Facilitation.** Five participants found specific techniques used by coaches to be helpful. One participant reported, "I love how they broke items down and then built them back up so we get the full understanding of how to improve our schools."

• When asked what aspects of the coaching were least helpful and why, one participant noted that "complaining about broken issues" was not useful. Another participant wanted "more explanation ahead of time to know our purpose." A third participant felt that the time of the meeting was not ideal and would have preferred a morning meeting.

• When asked how coaching could be improved for future participants, four participants offered the following:

- **Session organization.** One participant wanted to know the "big picture," sharing that the support offerings were "too vague." Similarly, another participant wanted "a visual layout to get a feel for how the sessions play out."

- **Session logistics.** One participant shared that the session would be better if it were held during the day and at the participant's school.

- **Coaching quality.** One participant requested that the coaches explain acronyms.

Conclusions

These findings suggest that participants had positive impressions of the coaching overall. There was room for improvement, however, concerning statements about the usefulness of the coaching on research and data. The open-ended comments will allow the NIC facilitators to build on a few strengths, including the facilitators' supportiveness and the opportunities provided for interaction with teachers and administrators at other ALCs. Facilitators might consider providing a clear roadmap for future sessions.

Appendix D. Post–Plan-Do-Study-Act Cycle survey

The post–Plan-Do-Study-Act survey is a brief survey administered shortly after the conclusion of each Plan-Do-Study-Act cycle. Respondents use a four-point scale to rate their participation in continuous improvement milestones. To track change over time, the surveys should be administered after each cycle.

The items in the survey can be tailored to specific networked improvement communities (NICs). The evaluation team for the Minnesota Alternative Learning Center Networked Improvement Community, for example, chose to use *change idea* rather than *intervention* because that was the language used by NIC facilitators. The evaluation team also embedded the specific data collection tool (exit tickets) in one of the survey items so that respondents could recognize it more readily. The survey includes items that ask respondents to rate the extent to which their alternative learning center (ALC) interacted with other ALCs in the NIC.

Minnesota Alternative Learning Center Networked Improvement Community: Post–Plan-Do-Study-Act survey

The purpose of this survey, administered by the Minnesota Department of Education, is to gather feedback from participants in the Minnesota Alternative Learning Center Networked Improvement Community (Minnesota ALC NIC). The survey asks about your participation in and perceptions of the Minnesota ALC NIC. Your responses will be used to help make the NIC more useful and relevant to the work you do in ALCs. The survey should take about 5–10 minutes to complete. Your responses will be analyzed by researchers from the Regional Educational Laboratory (REL) Midwest and will be completely confidential.

1. What is the name of your ALC? Please circle your response.

    a. ALC A.

    b. ALC B.

    c. ALC D.

    d. ALC E.

The following questions refer to the Plan-Do-Study-Act (PDSA) cycle that your ALC developed as part of the Minnesota ALC NIC (starting in fall 2019).

2. Please indicate the extent to which **you personally** participated in each of the following tasks related to your ALC's PDSA cycle. Please circle your response.

	Not at all	Minimally	Moderately	Very much so	Don't know
a. Identifying a "problem of practice" that will be the focus of the NIC's improvement efforts.	☐	☐	☐	☐	☐
b. Conducting a "root-cause analysis" to describe the causes of the problem of practice.	☐	☐	☐	☐	☐
c. Developing a "driver diagram," which is a visual representation of the drivers (or factors) that are expected to lead to improvement.	☐	☐	☐	☐	☐
d. Identifying a specific "change idea" that will influence drivers of improvement.	☐	☐	☐	☐	☐
e. Deciding how to measure implementation of the change idea.	☐	☐	☐	☐	☐
f. Developing plans for implementing the change idea.	☐	☐	☐	☐	☐
g. Implementing the change idea in your classroom.	☐	☐	☐	☐	☐
h. Collecting data using exit tickets (goal forms) and the PDSA trial tracker.	☐	☐	☐	☐	☐
i. Interpreting findings from data to understanding if implementation of the change idea was successful.	☐	☐	☐	☐	☐
j. Using findings from data to make decisions about next steps.	☐	☐	☐	☐	☐

3. Did you or your ALC colleagues encounter challenges with completing any of the PDSA activities described? Please describe these challenges.

_____

_____

_____

_____

4. Please indicate the approximate percentage of staff from your ALC with whom you have interacted about this NIC. Please circle your response.

   a. None.

   b. 1–20 percent of staff.

   c. 21—40 percent of staff.

   d. 41—60 percent of staff.

   e. 61–80 percent of staff.

   f. 81–100 percent of staff.

5. Please indicate the extent to which your ALC interacted with the other ALCs in this NIC.

	Not at all	Minimally	Moderately	Very much so	Don't know
a. The other ALCs in this NIC shared the findings from their PDSA cycle(s).	☐	☐	☐	☐	☐
b. Our ALC shared findings from our PDSA cycle(s) with staff from the other ALCs in this NIC.	☐	☐	☐	☐	☐
c. Our ALC had discussions about our improvement efforts with staff from the other ALCs in this NIC.	☐	☐	☐	☐	☐
d. Our ALC has shared resources related to improvement with the other ALCs in this NIC.	☐	☐	☐	☐	☐
e. Our ALC learned from the findings of the other ALCs in this NIC.	☐	☐	☐	☐	☐
f. Our ALC has benefited from discussions with the other ALCs in this NIC.	☐	☐	☐	☐	☐

6. What challenges, if any, did your ALC encounter when coordinating efforts with the other ALCs participating in the NIC?

_____

_____

_____

_____

Thank you for participating in this survey!

APPENDIX E. ARTIFACT TEMPLATES

The template in exhibit E1 can be used by networked improvement community participants to create a detailed plan for implementing the change idea/s.

Exhibit E1. Implementation plan

Alternative learning center name: Change idea tested: PDSA cycle no.:	Description
Where and with whom will this change idea be implemented?	
Who will be the primary person responsible for implementing this change idea? Which team participants will be supporting the implementation of this change idea?	
What are the key action steps for implementing this change idea?	
What is the timeline for implementing these action steps?	
Describe an early win for the implementation of this change idea.	
Describe one or two challenges to the implementation of this change idea.	
What supports or resources are essential for implementing this change idea?	

Source: Adapted with permission from Rowland el al. (2018).

The template in exhibit E2 can be adapted to collect and compile data related to the change idea. This particular summary sheet was designed to collect data on a goal-setting intervention, including data on the number of students setting goals each week, the number of teacher/student reflections on those goals, and daily student attendance. The sheet can be adapted for other types of interventions and measures. Participants can enter their interpretations of the data and their planned next steps at the bottom of the form.

Exhibit E2. Data summary sheet

Change Idea Tested: Goal setting		PDSA Cycle #: 1						
Total Number of Students: 15								
Date	Measure	Goal	Observed					
Week 1 (Example)	Number of students setting goals	12	10					
	Number of teacher/student reflections	12	8					
	Daily student attendance	**14**	**M** 14	**T** 13	**W** 13	**Th** 14	**F** 11	
Week 2	Number of students setting goals							
	Number of teacher/student reflections							
	Daily student attendance		**M**	**T**	**W**	**Th**	**F**	
Week 3	Number of students setting goals							
	Number of teacher/student reflections							
	Daily student attendance		**M**	**T**	**W**	**Th**	**F**	
Week 4	Number of students setting goals							
	Number of teacher/student reflections							
	Daily student attendance		**M**	**T**	**W**	**Th**	**F**	

Reflection:

Next Steps:

Source: Authors' compilation.

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