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Evaluation of the Networks for School Improvement (NSI) Initiative

NSI Impacts on Students and the Aspects of NSI Implementation Related to Impacts

FINAL REPORT

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Correction Notice

This report was updated in July 2026 to fix an issue with one year of the college enrollment data that the study team identified after publishing the report. The conclusions about impacts on college enrollment remained the same in the updated version of the report. There were minor changes to the interpretation of two findings presented in Section III about aspects of implementation related to impacts.

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Abstract

The use of network-based continuous improvement (CI) in education has grown substantially in recent years. The approach involves a network of schools using CI to iteratively test and refine strategies that address a common challenge while learning from one another. The Gates Foundation invested in networked-based CI from 2018 to 2025 by awarding more than $300 million to intermediary organizations that led 34 Networks for School Improvement (NSI) across the country. This report describes the effect of the NSI initiative on student outcomes through schools' fourth year of participation and explores the aspects of implementation that may have contributed to its effects.

The study measured the effect of the NSI by comparing outcomes for students in NSI schools to similar students in comparable schools that did not participate in the initiative. The study used both a matched comparison and random assignment research design.

The NSI had positive impacts on some student outcomes and no impacts on others:

- The 8th-grade on-track NSI had a positive impact on math test scores equivalent to moving a student from the 37th to the 40th percentile. The 8th-grade on-track NSI did not improve English language arts (ELA) test scores, attendance, or suspension rates.
- The 9th-grade on-track NSI had positive impacts on course-related outcomes. The NSI improved students' grade point average (GPA) by about 0.11 points on a 4-point scale, and improved course pass rates by 3 to 4 percentage points. These NSI did not reduce suspension rates.
- The college-ready on-track NSI did not impact the student outcomes prioritized by the foundation: GPA, advanced course taking, math and ELA test scores, high school graduation, or college enrollment.
- The well-matched postsecondary enrollment NSI increased the proportion of students completing the Free Application for Federal Student Aid (FAFSA) by 3 to 5 percentage points but did not increase college enrollment rates.

The positive impacts of the NSI were medium in size, comparable to other widely adopted education strategies, such as teacher professional development (Visscher et al. 2025), early warning systems (Faria et al. 2017), and supports for FAFSA completion (ideas42 2015; Page et al. 2020).

The study examined how core features of the NSI approach—schools' engagement in the network and intermediary supports and in CI—were related to its impacts on students. Several aspects of implementation were more common for NSI schools with meaningful impacts: engaging with other schools in their network and engaging in key aspects of CI (identifying a specific aim, developing a theory of practice improvement, conducting CI cycles that led to adoption of change ideas, and centering equity).

Taken together, the study's findings suggest that network-based school improvement is a promising approach for improving student outcomes. Despite disruptions from the COVID-19 pandemic, the NSI succeeded in improving some of the targeted student outcomes and schools with meaningful impacts were more likely to implement core features of the NSI approach.

I. Introduction

The use of network-based continuous improvement (CI) in education has grown substantially in recent years. This school improvement approach involves a network of schools using CI to iteratively test and refine strategies that address a common challenge while learning from one another. After the Carnegie Foundation's efforts to develop the approach and establish several use cases in education, the Gates Foundation sought to scale up network-based CI through its Networks for School Improvement (NSI) initiative. The Gates Foundation invested in the NSI initiative from 2018 to 2025, awarding more than $300 million in five-year grants to intermediary organizations that led 34 NSI across the country.

This rapid scale-up of network-based CI provides a unique opportunity to understand how intermediaries develop and implement school networks, how networks of schools implement CI to achieve a common goal, and the impact of these efforts on student outcomes. The Gates Foundation sponsored an evaluation of the NSI initiative to provide much-needed evidence on the implementation and impact of network-based CI. This report describes the impact of the NSI initiative on students and explores the aspects of implementation that may have contributed to any impacts. Additional evaluation reports describe how intermediaries designed and implemented their NSI (Bush-Mecenas et al. 2026), how participating schools implemented CI (Garet et al. 2026b), and how aspects of school networks and implementation of CI were related (Garet et al. 2026a).[2]

A. The NSI initiative

The NSI initiative focused on increasing the proportion of Black students, Latino students, and students experiencing poverty who are on track for high school graduation and college enrollment. Each intermediary organization formed a network with about 20 secondary schools (ranging from fewer than 10 to more than 50 schools) and supported teams of school staff in conducting CI. The foundation awarded three cohorts of grants from 2018 to 2020, with an average grant size of $10 million. Each NSI focused its grant on improving student outcomes in one or more of the following areas:

- The proportion of students who were on track for high school graduation and college enrollment in 8th grade (8th-grade on-track NSI), 9th grade (9th-grade on-track NSI), or 11th and 12th grade (college-ready on-track NSI); or
- The proportion of 12th-grade students who completed the steps needed to enroll in college (well-matched postsecondary enrollment NSI).

The NSI tended to focus their CI activities on one of three "entry points" identified by the foundation: *instructional* (working to improve the quality of instruction within classrooms), *early warning and response* (working to create more supportive, connected school environments), and *well-matched postsecondary enrollment* (working to support postsecondary application, enrollment, and persistence). Entry points are similar but not identical to outcome areas. For example, an NSI that aims to improve college-ready on-track outcomes might use an instructional entry point or early warning and response entry point to achieve that outcome.

The NSI evaluation

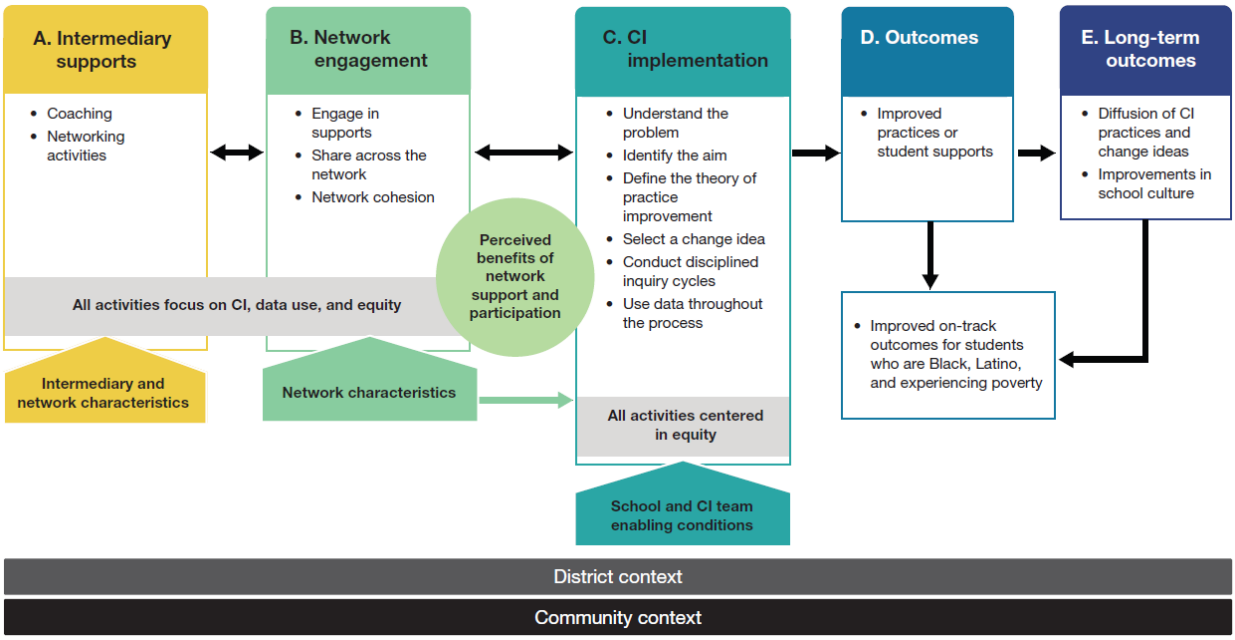
Despite growing interest in network-based CI, there is minimal evidence on its implementation and impacts to guide decision makers (Feygin et al. 2020; Dee 2024b). The foundation sponsored an evaluation to address this gap and build evidence on the NSI approach. The evaluation addresses three main research questions, each led by a different evaluation partner:

1. How do intermediaries design and implement their NSI? (RAND)
2. To what extent do participating schools implement CI activities? (American Institutes for Research)
3. What is the impact of the NSI on student outcomes? What aspects of the NSI approach are related to impacts on students? (Mathematica)

B. The NSI initiative's conceptual framework

The foundation outlined a broad structure for the NSI initiative while also providing flexibility for intermediaries to adapt their approach. The evaluation teams developed a conceptual framework to describe the key features of the NSI approach and guide the evaluation (Exhibit 1).

Exhibit 1. NSI conceptual framework



As illustrated in this framework, intermediaries brought together school CI teams—teams of educators and administrators—into networks (panel A). To support schools' use of CI, intermediaries provided school CI teams with coaching, professional learning, resources and tools, and opportunities to collaborate across the network. School CI teams engaged in structured CI processes—such as root cause analysis and inquiry cycles to test change ideas—to improve educator practices and student supports. The conceptual framework lists the six core features of CI the foundation expected schools to implement (panel C). Over time, the initiative aims to build capacity, strengthen school culture, improve student outcomes, and spread effective strategies within and beyond participating schools.

This report focuses on panels B, C, and D of the framework. The analyses capturing the impacts of NSI on student outcomes focus on panel D, including the impacts on on-track outcomes for Black students, Latino students, and students experiencing poverty. The analyses exploring how aspects of schools' implementation of the NSI were related to the NSI's impacts on student outcomes focus on whether NSI schools' engagement with the network and supports (panel B) and engagement in CI (panel C) were associated with impacts on student outcomes (panel D).

Box 1 provides an overview of the study sample, design, and data used in these analyses. More details are provided in Appendix A for the impact analysis and Appendix C for the analysis of the relationship between NSI implementation and impacts.

Box 1. Study sample, design, and data

Which NSI, schools, and districts were included in the analysis?

- This report describes impacts for 26 of the 34 NSI focused on 8th- or 9th-grade on-track, college-ready on-track, or well-matched postsecondary enrollment (see Appendix Exhibit E.1). The analysis includes NSI for which we could measure impacts on student outcomes by comparing NSI schools to similar nonparticipating schools in the same district (for 8th- and 9th-grade on-track NSI) or in different districts (for college-ready on-track and well-matched postsecondary enrollment NSI).[3] The analysis relating NSI implementation to impacts includes 22 of the 26 NSI in the impact analysis (we excluded college-ready on-track NSI).[4]
- The NSI in the study tended to partner with large, urban districts that serve a higher proportion of students who are Black, Latino, or experiencing poverty, compared to districts nationally (see Appendix Exhibit A.7).
- The impact analysis excludes NSI schools that (1) had fewer than 16 students in the focal grade and (2) were charter schools (due to difficulty obtaining data for comparison charter schools). Depending on the outcome, year, and analysis, the number of NSI schools ranged from 55 to 176 (8th-grade on-track), 49 to 133 (9th-grade on-track), 25 to 79 (college-ready on-track), and 99 to 143 (well-matched postsecondary enrollment).
- The analysis relating NSI implementation to impacts is based on the subset of NSI schools with (1) impacts for at least one outcome prioritized by their NSI and (2) data on their implementation of the NSI initiative. The number of schools varied by implementation measure, ranging from 195 to 355 of the 531 NSI schools in the impact analysis.

How did we measure the impact of the NSI on student outcomes?

- To measure the impact of the 8th- and 9th-grade on-track NSI, we compared the outcomes for NSI schools to outcomes for a matched set of similar schools in the same district. We matched NSI schools to comparison schools based on student characteristics and outcomes before the NSI started (a within-district matched comparison). We also used a more rigorous randomized controlled design for the 8th- and 9th-grade on-track NSI in Cohort 3. This approach randomly assigned interested schools within the same districts to either participate in the NSI immediately or to delay participation for three years. To measure impacts, we compared outcomes for students in the NSI schools and comparison schools, using a regression model to account for baseline differences in student and school characteristics. We included the Cohort 3 NSI in both the main matched comparison analysis and the randomized controlled trial analysis.
- To measure the impact of the college-ready on-track and well-matched postsecondary enrollment NSI, we compared outcomes for students in NSI schools to students in similar schools in different districts with similar baseline characteristics as the NSI districts (a between district matched comparison). We used this approach because most of these NSI worked with all or almost all the schools in a district, so within-district comparisons were not feasible.

- We primarily report on impacts in standard deviation units so that the magnitude of impacts can be easily compared across outcomes. We define impacts that are less than 0.05 standard deviations as small, impacts between 0.05 and 0.20 as medium, and impacts above 0.20 as large following the classification system proposed in Kraft (2020) based on a synthesis of the effects of prior education interventions.
- This report describes impacts through schools' fourth year of NSI participation. Exhibit 2 shows the relevant school years for measuring impacts for each cohort. In cases where a school joined an NSI after the start of the grant, the school entered the analysis based on the year that school joined rather than the year of the grant. For example, schools that joined a Cohort 1 NSI in 2020-21 are included in the Year 1 impact analysis for 2020-21 rather than the Year 3 impact analysis.
- The COVID-19 pandemic significantly disrupted implementation of the NSI grants. The first two cohorts of NSI grants were in their first or second year when schools across the country pivoted to virtual instruction in 2020. The start of the third NSI cohort in fall 2020 was delayed by several months. The NSI had to adapt to inconsistent access to in-person learning throughout the 2020-21 school year as well as ongoing challenges with chronic absenteeism, student well-being, and academic recovery.

Exhibit 2. School years and NSI cohorts included in this report

Cohort	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24
Cohort 1	Year 1*	Year 2*	Year 3*	Year 4*	Year 5	
Cohorts 1B/2		Year 1*	Year 2*	Year 3*	Year 4*	Year 5
Cohort 3			Year 1*	Year 2*	Year 3*	Year 4*

Note: The exhibit shows the school years for measuring impacts for schools starting in the first grant year for each cohort. The impact analysis results in this report are based on the years in the yellow shaded cells with an asterisk (*). Though we did not have a large enough sample to measure overall NSI impacts in Year 5, we used school-level impacts from that year in the analysis measuring the relationship between NSI implementation and impacts.

How did we measure the relationship between NSI implementation and impacts?

- To analyze the relationship between NSI implementation and impacts, we examined whether NSI schools that had meaningful impacts were more or less likely to implement each particular aspect of the NSI approach than NSI schools that did not have meaningful impacts.
- We defined NSI schools as having meaningful impacts in a given year if they had at least a 0.05 standard deviation impact on average across outcomes their network prioritized.
- We then measured differences between the two groups of schools in the percentage of schools implementing each aspect of the NSI approach.
- The analysis is based on yearly data on each school's implementation and impacts. When we describe the percentage of schools engaging in an aspect of the NSI, we are referring to the percentage of schools across all years combined.

What data were used for the analysis?

- School rosters collected from intermediaries were used to identify schools that participated in the NSI.
- Administrative data from districts and state education agencies were used to measure outcomes and baseline characteristics for districts, schools, and students. We also used publicly available school-level data from the U.S. Department of Education's Common Core of Data and ED*Facts*.
- The study measured NSI implementation using data collected by RAND and the American Institutes for Research (AIR). RAND's Team Connections Survey captured information on schools' engagement in the network and supports, as reported by the leader of the school CI team (Bush-Mecenas et al. 2026). AIR coded artifacts documenting the work of school CI teams and intermediaries to capture information on schools' engagement in CI. Enabling conditions for the NSI work were measured using AIR's School Leader Survey, rosters of school CI team members, and school climate surveys from districts (Garet et al. 2026b).

II. Impacts of the NSI on student outcomes

This section describes the impact of the NSI initiative for each outcome area. We present impacts on the full range of outcomes the foundation expected the NSI in each outcome area to improve. Because each NSI ultimately homed in on a subset of outcomes most relevant for their grant, we also examine impacts for the subset of NSI that prioritized that each outcome. Given the initiative's focus on students who are Black, Latino, and experiencing poverty, we report impacts of the NSI on these student subgroups.

We present impacts through schools' fourth year of NSI participation. Measuring impacts across multiple years is important because the NSI work takes time to develop and impact students. For example, the NSI need time to develop connections between schools, build schools' capacity for CI, and support schools in testing and refining strategies through CI. As a result, the foundation did not expect the NSI to achieve full impact until schools' third year of participation.

This section describes impacts across four groups of NSI, 21 outcomes, four years, three student subgroups, and two types of analyses. With an analysis this expansive, it is possible to find impacts that are statistically significant due to random chance. Therefore, we highlight impacts that are consistent across years and across related analyses and do not emphasize impacts that are statistically significant for only one year or one analysis.

We primarily focus on results from the matched comparison analysis because that analysis includes the largest sample of NSI schools. We generally found similar results from the more rigorous random assignment study as described in Box 4 and shown in Appendix Exhibits B.8–B.12.

A. Impacts of the 8th-grade on-track NSI

Evidence shows that students' 8th-grade year is critical for their long-term success (Allensworth et al. 2014; Neild and Balfanz 2006; Slaughter et al. 2018). In response, the Gates Foundation focused its 8th-grade on-track NSI on increasing the number of 8th-grade students on track for high school graduation and college enrollment. Ten of the 11 NSI focused on improving teachers' instruction in math (5 NSI), English language arts (ELA) (4 NSI), or both (1 NSI) (see example in Box 2).[5] The 8th-grade on-track NSI focused on improving a variety outcomes: three NSI focused on math scores, five on ELA test scores, four on course-related outcomes, three on attendance, and only two on suspensions (Appendix Exhibit A.14).

Box 2. Example strategies tested by an 8th-grade on-track NSI[6]

One NSI focused on increasing the quality of teachers' instruction and deepening teachers' instructional knowledge and skills. School CI teams tested strategies related to math and ELA instruction and broader pedagogic or classroom culture approaches, often refining the strategies across multiple CI cycles. For example, some teams first created class jobs and responsibilities, then incorporated student choice in job assignments and layered on "small-group captains" to support groups of students working on activities aligned with their skill level. A teacher on another school team tested a "math talk protocol" to promote math conversations among students. The teacher gathered student feedback to assess the usefulness of the approach and further refine it. After positive results in both student feedback and learning, other math teachers in the school adopted the strategy.

The 8th-grade on-track NSI had an impact on math test scores but did not have a consistent impact across the other outcomes the foundation expected these NSI to improve.

The study examined the impact of the 8th-grade on-track NSI on the six outcomes the foundation prioritized for these NSI (Exhibit 3). The NSI had a positive impact on students' math achievement in schools' first and third years of participation. While the 8th-grade on-track NSI also had an impact on students' grade point average (GPA) and course pass rates in schools' first year of participation, these impacts were not present in other years. The NSI did not impact any of the other outcomes: students' ELA achievement, attendance rate, or suspension rate across all four years (Exhibit 3; see Appendix Exhibit B.1 for more details).

Exhibit 3. Overview of 8th-grade on-track NSI impacts on student outcomes

	Number of NSI prioritized (out of 11)	Year 1	Year 2	Year 3	Year 4
GPA for core courses	2	✓	⊘	⊘	⊘
Share of math and ELA courses passed	3	✓	⊘	⊘	⊘
Math test scores	3	✓	⊘	✓	⊘
ELA test scores	5	⊘	⊘	⊘	⊘
Attendance rate	3	⊘	⊘	⊘	⊘
Share of students with no suspensions	2	⊘	⊘	⊘	⊘
Overall on-track indicator		✓	⊘	⊘	⊘

✓ NSI schools had a statistically significant impact on the outcome at the 0.05 level.

⊘ NSI schools did not have a statistically significant impact on the outcome.

Source: Administrative student records for the 2017-18 through 2023-24 school years.

Note: The sample for each analysis varies based on year and outcome area. Ranges of sample sizes across outcomes included the following: Year 1 = 56 to 176 NSI schools; Year 2 = 103 to 140 NSI schools; Year 3 = 75 to 126 NSI schools; and Year 4 = 55 to 93 NSI schools. The sample consists of 11 8th-grade on-track NSI. Some NSI prioritized more than one outcome. Four NSI prioritized at least one course-related outcome, either GPA for core courses or the share of math and ELA courses passed (see Exhibit A.14). A student is considered on-track if they (a) have a core course GPA of at least 3.0, (b) have no Ds or Fs in math or ELA courses, (c) score at least proficient on the state math assessment and earned at least a 3.0 GPA in math, (d) scored at least proficient on the state ELA assessment and earned at least a 3.0 GPA in ELA, (e) had an attendance rate of at least 96 percent, and (f) received no out-of-school suspensions. All non-missing student data were required to be included in the overall on-track indicator analysis, so that row is based on the minimum sample for each year.

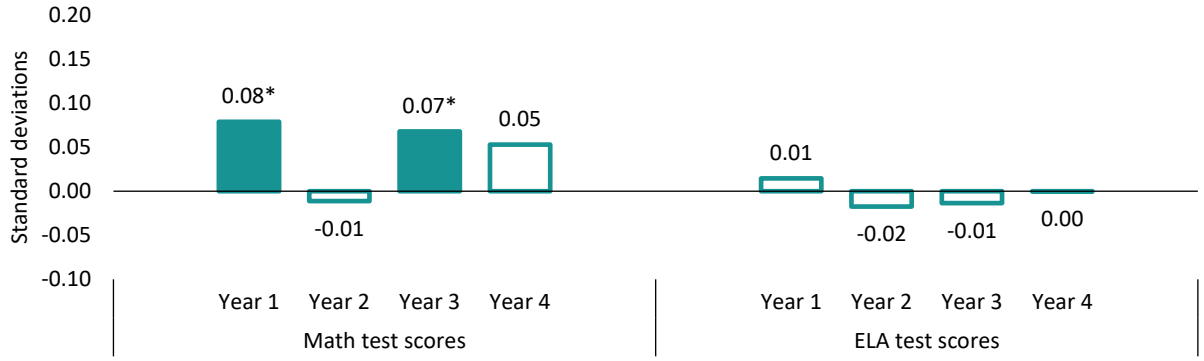
The 8th-grade on-track NSI had a medium-sized impact on math achievement in schools' first and third years of participation.[7] The NSI increased students' math test scores by 3 percentile points in those years, from the 37th to the 40th percentile in the state math test score distribution. To make it easier to compare the magnitude of impacts for different outcomes, Exhibit 4 shows these impacts in standard deviation units. The impacts are equivalent to a 0.08 standard deviation increase in math test scores in year 1 and a 0.07 standard deviation increase in year 3 (Exhibit 4).[8] The magnitude of the math test score impact is comparable to other interventions aimed at improving teacher instruction such as in-service teacher professional development (Visscher et al. 2025).

The lack of an impact in schools' second year of participation may be related to disruptions from COVID. For the majority of 8th-grade on-track NSI schools in the analysis, the second year of participation

occurred in the 2021-22 school year when schools had returned to in-person instruction but were facing continued challenges with chronic absenteeism, student mental health, and academic recovery (Dee 2024a; Liu et al. 2021).

The 8th-grade on-track NSI impact on math achievement is mostly due to the three networks that focused on improving math test scores. These three NSI had larger impacts on math achievement, increasing students' math test scores by 6 percentile points or 0.14 standard deviations in Year 3 (Appendix Exhibit B.3). The other 8th-grade on-track NSI did not have a statistically significant impact on students' math test scores.

Exhibit 4. Impacts of the 8th-grade on-track NSI on math and ELA test scores, by years of school participation



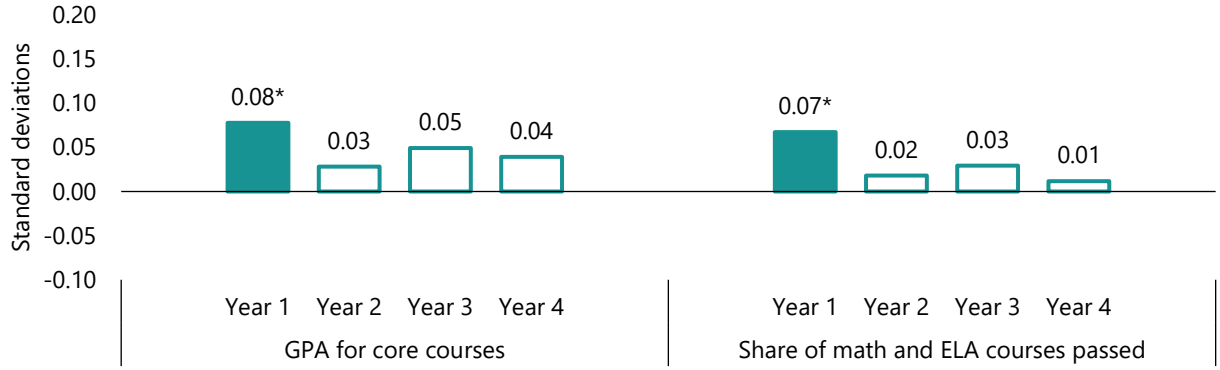
Source: Administrative student records for the 2017-18 through 2023-24 school years.

Note: Filled bars and asterisks (*) indicate that the difference between NSI schools and comparison schools is statistically significant at the 0.05 level, two-tailed test. The math test scores sample consists of 56 NSI schools in Year 1, 103 NSI schools in Year 2, 114 NSI schools in Year 3, and 87 NSI schools in Year 4. The ELA test scores sample consists of 60 NSI schools in Year 1, 107 NSI schools in Year 2, 118 NSI schools in Year 3, and 92 NSI schools in Year 4. The number of NSI schools in the analysis for math test scores is lower than the number of schools in the analysis for ELA test scores. This is because in some districts 8th-grade students can take an algebra end-of-course exam in place of the state math assessment. The study design section of Appendix A provides additional details.

The impacts of the 8th-grade on-track NSI on course-related outcomes in schools' first year of NSI participation were medium in size. In that year, the NSI improved students' core course GPA by 0.08 points (from 2.37 to 2.45 on a 4.0 scale) and increased the share of math and ELA courses passed by 3 percentage points (from 72 to 75 percent).[9] The Year 1 impacts are equivalent to a 0.08 standard deviation increase in core course GPA and a 0.07 standard deviation increase in students' math and ELA course pass rates. These effects did not persist in schools' second, third, or fourth years of participation (see Exhibit 5; the hollow bars show impacts that are not statistically significant and can be interpreted as "no impact").

Similar to the math test score impacts, the impacts on GPA were larger for the NSI that focused on improving course-related outcomes. These NSI had statistically significant impacts on GPA in Years 3 and 4, increasing GPA by 0.12 points on a 4.0 scale in Year 3 and by 0.14 points in Year 4 (equivalent to increases of 0.12 and 0.14 standard deviations, respectively) (Appendix Exhibit B.2).

Exhibit 5. Impacts of the 8th-grade on-track NSI on course-related outcomes, by years of school participation



Source: Administrative student records for the 2017-18 through 2023-24 school years.

Note: Filled bars and asterisks (*) indicate that the difference between NSI schools and comparison schools is statistically significant at the 0.05 level, two-tailed test. The sample for each outcome consists of 176 NSI schools in Year 1, 140 NSI schools in Year 2, 126 NSI schools in Year 3, and 93 NSI schools in Year 4.

We did not observe the same pattern of higher impacts for 8th-grade on-track NSI that prioritized other outcomes. For example, there were no statistically significant impacts on the share of math and ELA courses passed, ELA test scores, attendance, or suspension rates for 8th-grade on-track NSI that prioritized those outcomes (Appendix Exhibits B.2–B.5).

The foundation combined all the 8th-grade on-track outcomes into an overall indicator of whether students were on track for high school graduation and college enrollment. This on-track indicator is more challenging to meet than other commonly used on-track indicators because it includes more measures and sets higher thresholds.[10] The 8th-grade on-track NSI had an impact on the percentage of students on track in schools' first year of NSI participation, but not in other years (Appendix Exhibit B.13).

B. Impacts of the 9th-grade on-track NSI

The foundation's 9th-grade on-track NSI supported students in their transition to 9th grade, a key inflection point that can affect students' path toward high school graduation and postsecondary success. The foundation focused these NSI on a set of academic and behavioral outcomes that are viewed as predictors of students' likelihood of graduating from high school and enrolling in college (Allensworth and Easton 2007; Allensworth et al. 2018). All the 9th-grade on-track NSI prioritized one or more course-related outcomes (GPA, core course pass rate, credit completion); two NSI also focused on improving attendance; and none focused on suspension rates (see Appendix Exhibit A.15).

Most 9th-grade on-track NSI (6 of the 8 NSI) focused their CI activities on identifying 9th-grade students who were off track and providing them additional supports (early warning and response NSI). Those supports included tutoring, regular one-on-one check-ins with teachers, and meetings with parents (Box 3). Two of the 9th-grade on-track NSI focused on instruction—one on math and the other on ELA (instructional NSI).

Box 3. Examples of strategies tested by a 9th-grade on-track NSI

Schools in one NSI tested strategies such as offering students incentives for strong attendance or completion of weekly assignments to increase motivation, providing tutoring or targeted intervention to students identified through progress monitoring, or holding one-on-one check-ins with students to discuss barriers to attendance- or grade-related success. Schools often refined these approaches over multiple cycles. For example, one school spent two cycles testing one-on-one check-ins before adjusting the approach in a third cycle to allow more time for these conversations. Another school tested the same strategy in an initial cycle but eventually shifted to offering incentives to improve attendance.

The 9th-grade on-track NSI had positive impacts on course-related outcomes across Years 1 to 4.

The 9th-grade on-track NSI had consistent positive impacts on students' course-related outcomes: GPA, course pass rate, and credit completion (Exhibit 6). The NSI increased students' GPA by 0.10 to 0.11 points in Years 2 through 4. These impacts are equivalent to increases of 0.09 to 0.10 standard deviations (Exhibit 7). These medium-sized impacts of the 9th-grade on-track NSI on GPA are comparable to the impacts of similar interventions, such as early warning systems (Faria et al. 2017, 0.11 grade points) or interventions designed to improve students' sense of belonging (Bos et al. 2019, 0.10 grade points).

The 9th-grade on-track NSI also improved students' core course pass rate by 3 to 4 percentage points in Years 2 through 4. For example, in Year 3 the NSI increased the core course pass rate from 66 to 70 percent. In Years 2 and 3, the NSI increased the percentage of students earning at least five credits by 2 to 3 percentage points, equivalent to an increase of 0.07 to 0.08 standard deviations.

Exhibit 6. Overview of 9th-grade on-track NSI impacts on student outcomes

	Number of NSI prioritized (out of 8)	Year 1	Year 2	Year 3	Year 4
GPA for all courses	5	✓	✓	✓	✓
Share of core courses passed	6	⊘	✓	✓	✓
Share of 9th-grade students completing at least 5 credits	7	⊘	✓	✓	⊘
Attendance rate	2	⊘	⊘	⊘	⊘
Share of students with no suspensions	0	⊘	⊘	⊘	⊘
Overall on-track indicator		⊘	✓	⊘	✓

✓ NSI schools had a statistically significant impact on the outcome at the 0.05 level.

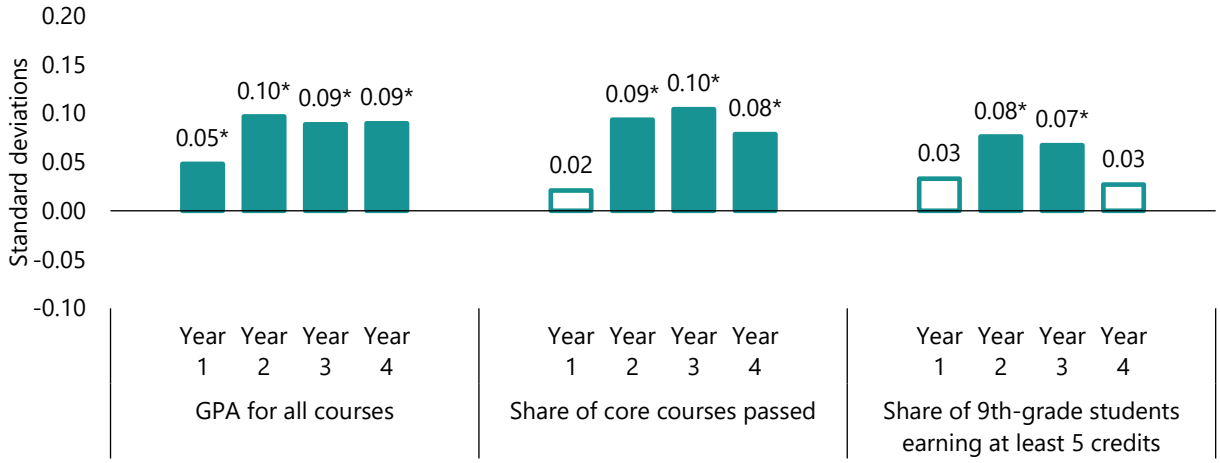
⊘ NSI schools did not have a statistically significant impact on the outcome.

Source: Administrative student records for the 2017-18 through 2023-24 school years.

Note: The sample for each analysis varies based on year and outcome area. Ranges of sample sizes across outcomes included the following: Year 1 = 70 to 133 NSI schools; Year 2 = 94 to 120 NSI schools; Year 3 = 59 to 110 NSI schools; and Year 4 = 49 to 77 NSI schools. The sample consists of eight 9th-grade on-track NSI. Some NSI prioritized more than one outcome. All eight NSI focused on at least one course-related outcome, either GPA, the share of core courses passed, or the share of 9th-grade students completing at least five credits (see Exhibit A.15). The on-track indicator is equal to 1 for students who (a) have a GPA of 3.0 or higher, (b) received one or fewer Ds or Fs in a core subject, (c) earned at least five course credits,

(d) had an attendance rate of at least 96 percent, and (e) received no out-of-school suspensions. All non-missing student data were required to be included in the overall on-track indicator analysis, so that row is based on the minimum sample for each year.

Exhibit 7. Impacts of the 9th-grade on-track NSI on course-related outcomes, by years of school participation



Source: Administrative student records for the 2017-18 through 2023-24 school years.

Note: Filled bars and asterisks (*) indicate that the difference between NSI schools and comparison schools is statistically significant at the 0.05 level, two-tailed test. The sample for each outcome consists of 133 NSI schools in Year 1, 120 NSI schools in Year 2, 110 NSI schools in Year 3, and 77 NSI schools in Year 4.

The positive impacts on course-related outcomes may be related to the fact that all the 9th-grade on-track NSI prioritized these outcomes. These NSI tested change ideas focused on identifying students falling behind academically and providing additional guidance or support. In some cases, this support focused on helping students improve their grades, either through advising, academic support, or opportunities to make up missed assignments or retake assessments.[11]

The 9th-grade on-track NSI did not have an impact on students' attendance or suspension rates (Appendix Exhibit B.6). The NSI may not have improved these outcomes because only two NSI prioritized them. However, the two 9th-grade on-track NSI whose work focused on improving attendance were included in the random assignment study that found positive impacts on student attendance. Box 4 provides additional details about results from the random assignment analysis.

The positive impacts on course-related outcomes in Years 2 and 4 were enough to increase the percentage of students meeting the foundation's on-track measure by 2 percentage points (Appendix Exhibit B.14). However, the 9th-grade on-track NSI did not have a significant impact on the percentage of students meeting the on-track measure in other years. Because the Gates Foundation's definition of on-track requires that a student meet a threshold for each individual outcome, it is difficult to have a substantial impact on the overall on-track indicator without having impacts on all the outcomes that make up the overall indicator. Improving all individual outcomes is challenging because, as described above, the study's NSI typically targeted a subset of the outcomes and the foundation set a high threshold for meeting its on-track measure.

In the evaluation's first report, we hypothesized that the 9th-grade on-track NSI tested strategies that may have been particularly effective during the COVID-19 pandemic. Those change ideas were related to

developing relationships with students, identifying students needing academic support, improving the school culture, and providing academic advising and tutoring. However, the 9th-grade on-track NSI continued to have positive impacts on course-related outcomes in Years 3 and 4 (2022-23 and 2023-24 for many 9th-grade on-track NSI) after the height of the COVID-19 pandemic. This suggests that the pandemic may not have influenced the effectiveness of the change ideas tested by the 9th-grade on-track NSI.

Box 4. Are the main matched comparison findings supported by a smaller random assignment study?

- The main results in this report are from the matched comparison analysis because that analysis includes a larger sample of NSI schools and allows us to measure impacts through schools' fourth year of participation. However, we also measured impacts using a randomized controlled design that evaluated the 8th- and 9th-grade on-track NSI in Cohort 3 through schools' third year of participation. Random assignment ensures that differences in outcomes between NSI schools and comparison schools are due to the NSI and not due to differences in other school characteristics. This study design allows us to compare impacts from the more rigorous random assignment approach to the impacts from the matched comparison approach; if results are similar, it provides evidence of the validity of the main matched comparison approach.
- The results from the random assignment study were generally similar to the matched comparison results for the 8th-grade on-track NSI. The random assignment study found that the 8th-grade on-track NSI did not have a consistent impact on the foundation's prioritized outcomes (Appendix Exhibits B.8–B.10). However, in contrast to the matched comparison results, there were no impacts on math test scores in the random assignment study. This could be because the math test score impacts were driven primarily by NSI focused on improving that outcome, and only one of the five 8th-grade on-track NSI in the random assignment analysis were focused on improving math test scores.
- The random assignment and matched comparison results were also similar for the 9th-grade on-track NSI. The random assignment study found that 9th-grade on-track NSI had medium-sized, positive impacts on course-related outcomes (Appendix Exhibit B.11). However, the random assignment analysis also found a medium-sized positive impact on attendance rates in schools' second and third years of participation (Appendix Exhibit B.12). The impact in Year 3 is equivalent to a 2-percentage-point increase in the attendance rate, from 83 to 85 percent (0.11 standard deviations). Both of the 9th-grade on-track NSI that focused on improving attendance were in the random assignment study, which may have contributed to the positive impacts in the random assignment analysis.

C. Impacts of the college-ready on-track NSI

The Gates Foundation's college-ready on-track NSI grants aimed to increase the proportion of 11th- and 12th-grade students who are academically on track for enrolling in college. The foundation expected these NSI to improve students' GPA, math and ELA test scores, advanced course-taking rates, and high school graduation rates. However, most NSI prioritized a subset of these outcomes, with three NSI focused solely on improving math test scores (Appendix Exhibit A.16). The foundation expected improvements in academic preparation to increase college enrollment, particularly in colleges that supported student persistence and completion (which the foundation defined as colleges with graduation rates of at least 50 percent).

Three of the four college-ready on-track NSI in the analysis tested strategies to improve high school teachers' math instruction (instructional NSI), while the fourth focused on improving academic and

behavioral outcomes with a whole-student, relationship-centered approach (early warning and response NSI). (See Box 5 for examples of the types of strategies these NSI tested.)

The report describes impacts of the college-ready on-track NSI through schools' third year of participation because one NSI did not begin its grant until the 2021-22 school year, limiting our sample for measuring impacts in schools' fourth year.

We recommend interpreting the results with caution because three of these NSI had implementation contexts that made it less likely the study would find impacts by schools' third year of participation:

- Two NSI had a mismatch between the grade levels the NSI focused on (mostly 9th- and 10th-grade students) and the grade levels the foundation, and thus the evaluation, focused on for college-ready on-track (11th- and 12th-grade students).[12] As a result, the analysis captures the effect of these NSI one to three years after students were directly affected by the NSI activities in their 9th- or 10th-grade year.
- Denver Public Schools paused its NSI in the third grant year (2021-22) because of turnover in district leadership. It resumed NSI activities the next year with a different group of schools and a narrower focus on math achievement.[13] This interruption in NSI activities may have limited impacts in the 2021-22 and 2022-23 school years.

We also recommend interpreting the college-ready on-track NSI impacts with caution because two of the NSI each partnered with only one school district. Because the analysis of college-ready on-track NSI compares NSI schools to similar schools in other districts, differences in student outcomes between these two groups of schools could be due to the impact of the NSI as well as other district initiatives that occurred at the same time as the NSI grant.

Box 5. Examples of strategies tested by a college-ready on-track NSI

The school CI teams in one NSI tested strategies related to the network's five primary drivers to improve on-track rates: adult mindsets and systemic bias, course access, student success teams, academic interventions, and learner mindset and sense of belonging. For example, one strategy initially involved increasing instructional support for students in math classes by adjusting the master schedule to reduce class sizes. In a later CI cycle, one school examined the block schedules of other similar schools to understand their options. Another idea involved implementing norms in math classes that encourage positivity, and in some cases beginning class with a "mindset message."

The college-ready on-track NSI did not have a consistent impact on the outcomes they were expected to improve.

The college-ready on-track NSI did not have positive impacts on the foundation's prioritized outcomes (Exhibit 8). The NSI did not affect students' GPA or the percentage of students taking advanced courses or exams through schools' first three years of NSI participation (Appendix Exhibit B.15). The lack of impact on these outcomes may be because only one of the four NSI focused on improving course-related outcomes.

Exhibit 8. Overview of college-ready on-track NSI impacts on student outcomes

	Number of NSI prioritized (out of 4)	Year 1	Year 2	Year 3
GPA	1	⊘	⊘	⊘
Advanced course taking	1	⊘	⊘	⊘
Advanced Placement exam taking	1	⊘	⊘	⊘
Math test scores	4	⊘	⊘	⊘
ELA test scores	1	⊘	⊘	✓
High school graduation	1	⊘	⊘	⊘
Enrollment in any college	0	⊘	⊘	⊘
Enrollment in college with graduation rate ≥50%	0	⊘	⊘	⊘

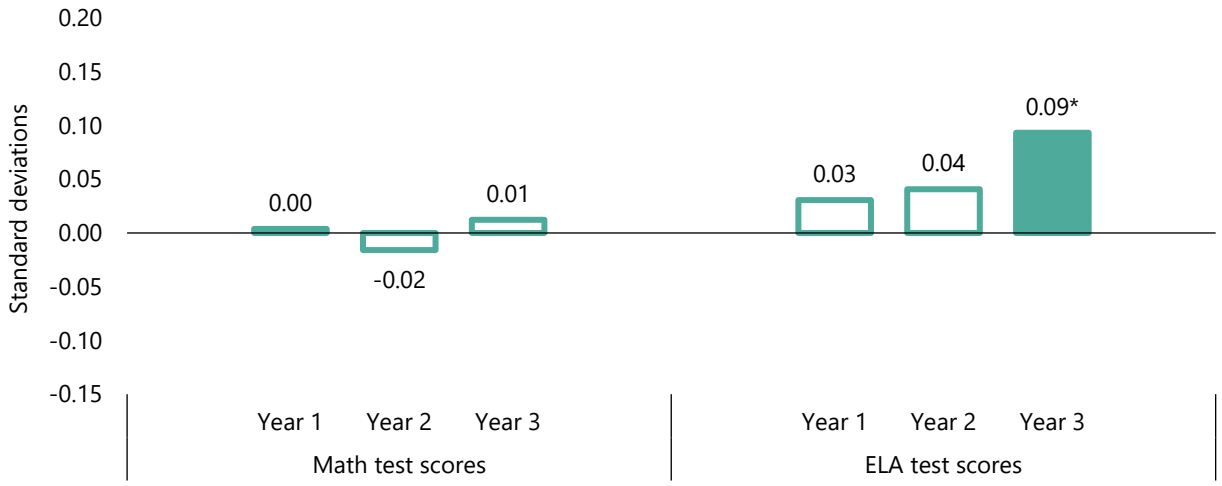
✓ NSI schools had a statistically significant impact on the outcome at the 0.05 level.

⊘ NSI schools did not have a statistically significant impact on the outcome.

Note: Data for high school graduation and the two college enrollment outcomes were available from all four college-ready on-track NSI. Data on the other outcomes were only available for three of the four NSI, with data available for different sets of three NSI depending on the outcome. Appendix Exhibit A.3 provides additional details about data availability. The sample for each analysis varied based on year and outcome area. Ranges of sample sizes across outcomes included the following: Year 1 = 25 to 79 NSI schools; Year 2 = 29 to 71 NSI schools; and Year 3 = 31 to 62 NSI schools. The sample consists of four college-ready on-track NSI. Some NSI prioritized more than one outcome (see Exhibit A.16.)

The NSI improved students' ELA test scores in schools' third year of participation by 4 percentile points (from the 36th to the 40th percentile), an increase equivalent to 0.09 standard deviations (Exhibit 9). However, we suggest interpreting this impact with caution because: (1) the NSI did not have an impact on ELA test scores in their first two years, (2) the sample of schools for measuring ELA test score impacts is small compared to other outcome areas (about 30 NSI schools), and (3) most of the college-ready on-track NSI focused on math (these NSI did not have an impact on students' math test scores).

Exhibit 9. Impacts of the college-ready on-track NSI on math and ELA test scores



Source: Administrative student records for the 2015-16 through 2023-24 school years.

Note: Filled bars and asterisks (*) indicate that the difference between NSI schools and comparison schools is statistically significant at the 0.05 level, two-tailed test. The math test scores sample consists of 25 NSI schools in Year 1, 32 NSI schools in Year 2, and 38 NSI schools in Year 3. The ELA test scores sample consists of 25 NSI schools in Year 1, 29 NSI schools in Year 2, and 31 NSI schools in Year 3.

The college-ready on-track NSI did not affect high school graduation, college enrollment, or enrollment in colleges with a graduation rate of at least 50 percent (Appendix Exhibit B.16). The lack of impacts on these outcomes may be because only one of the four college-ready on-track NSI focused on high school graduation and none focused on postsecondary enrollment.

D. Impacts of the well-matched postsecondary enrollment NSI

The path to college requires navigating multiple steps that can present barriers for students, such as identifying colleges that are a good fit, preparing and submitting college applications, applying for financial aid, and enrolling in college (Castleman and Page 2013; Hoxby and Avery 2012; Page 2015; Roderick et al. 2008). The foundation's well-matched postsecondary enrollment NSI sought to increase college enrollment rates by supporting 12th-grade students through these steps toward college. The foundation expected these NSI to increase the number of students who completed the Free Application for Federal Student Aid (FAFSA), enrolled in college, and enrolled in colleges with a graduation rate of at least 50 percent.

All four well-matched postsecondary enrollment NSI focused on helping students complete the FAFSA and submit college applications (Appendix Exhibit A.17; see example in Box 6). The foundation encouraged the NSI to help students complete the FAFSA form by December of their 12th-grade year because there are benefits to completing the FAFSA earlier than the summer deadline (for example, financial aid from states and institutions may have earlier deadlines).[14] The study examined impacts of the NSI on FAFSA completion by December and the following June of students' 12th-grade year to provide a comprehensive picture of NSI impacts on FAFSA completion.

Box 6. Examples of change ideas for well-matched postsecondary enrollment NSI

The school CI teams from one NSI selected strategies focused on the network's four drivers of college enrollment: financial access, college application process, students' sense that they belong in college, and enrollment after admittance. For example, some schools sent students personalized emails about financial aid, sent robocalls from the superintendent to parents about the FAFSA, or hosted "Sit & Do" workshops where parents could learn about the FAFSA and complete it in real time with support.

The well-matched postsecondary enrollment NSI had a medium-sized impact on FAFSA completion.

The well-matched postsecondary enrollment NSI increased the proportion of students completing the FAFSA in schools' second and fourth year of NSI participation (Exhibit 10). The NSI increased the rate of early FAFSA completion by 3 percentage points in schools' second year (a 0.07 standard deviation increase) and by 5 percentage points in schools' fourth year (a 0.09 standard deviation increase) (Exhibit 11). The NSI had similar impacts on FAFSA completion by June of students' 12th-grade year (Appendix Exhibit B.17). This suggests that the NSI encouraged students to complete their FAFSA early while also increasing the overall number of students completing the FAFSA.

The lack of impacts on FAFSA completion in schools' third year may be due to a policy change in Texas that required students to complete the FAFSA or an equivalent state financial aid form to graduate from high school that year (the 2021-22 school year for most schools). Because the majority of well-matched postsecondary enrollment NSI schools are in Texas (75 out of 110 schools), this requirement may have dampened the effect of the NSI by increasing FAFSA completion rates that year for both NSI schools and comparison schools in the state (Kim 2025).[15] When the FAFSA completion rates stabilized the next year (schools' fourth year of NSI participation), Texas NSI schools may have identified strategies to further improve FAFSA completion rates (for example, by identifying students who were not likely to complete the FAFSA despite the state's graduation requirement).

The NSI impacts on FAFSA completion are consistent with the impacts of other strategies to help high school students complete their FAFSA, such as email campaigns to help students and their parents navigate the FAFSA application process (Ideas42 2015; 6-percentage-point increase) and sending weekly, personalized text messages to students about college financial aid (Page et al. 2020; 6 percentage-point increase).[16] Some NSI schools used these types of strategies to encourage FAFSA completion (see Box 6), potentially explaining the comparable impacts.

The well-matched postsecondary enrollment NSI did not have a consistent impact on college enrollment.

The well-matched postsecondary enrollment NSI increased the proportion of students enrolling in college in schools' first year of NSI participation by 2 percentage points but had no impact in other years (Exhibit 11). Given the timing of the NSI grants, the Year 1 impacts are primarily based on college enrollment in fall 2020. Many high school graduates delayed or canceled their college plans in fall 2020 as a result of the COVID-19 pandemic (National Student Clearinghouse 2020; Reed et al. 2020). One potential explanation for the lack of impact after Year 1 is that the NSI helped students maintain their college

enrollment plans amid the challenges of the pandemic in fall 2020 but did not have an impact after the national decline in college enrollment leveled off in fall 2021 (National Student Clearinghouse 2021).

The NSI did not affect enrollment in colleges with a 50 percent graduation rate in any year. These results suggest that although FAFSA completion is an important step in the college enrollment process, students face additional barriers to college that may limit impacts on college enrollment.

Exhibit 10. Overview of well-matched postsecondary enrollment NSI impacts on student outcomes

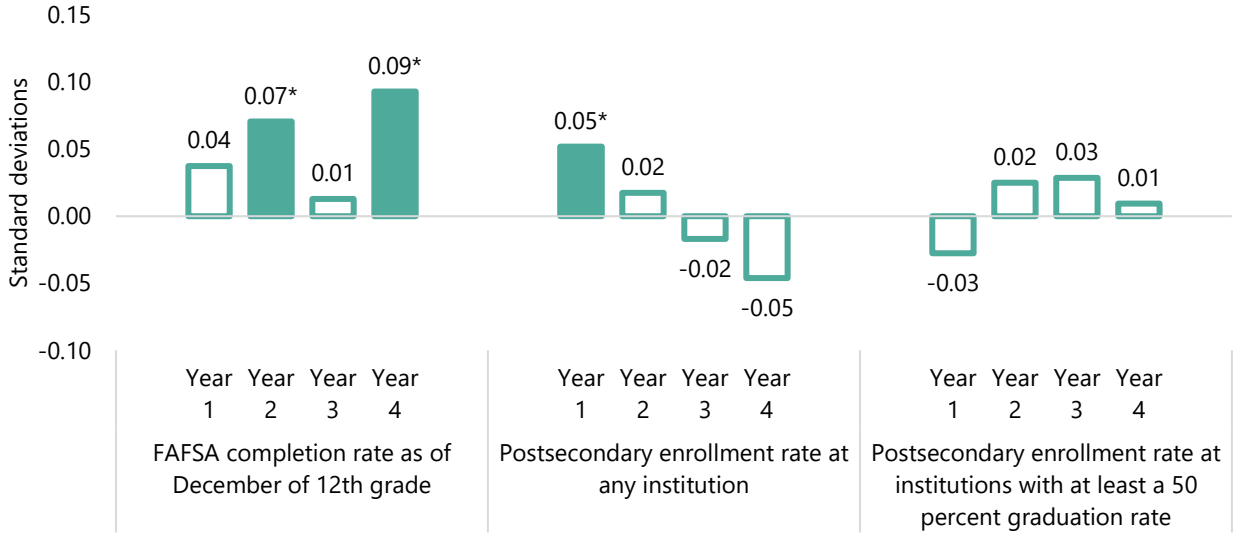
	Number of NSI prioritized (out of 4)	Year 1	Year 2	Year 3	Year 4
FAFSA completion	4	⊘	✓	⊘	✓
Enrollment in any college	4	✓	⊘	⊘	⊘
Enrollment in college with graduation rate ≥50%	0	⊘	⊘	⊘	⊘

✓ NSI schools had a statistically significant impact on the outcome at the 0.05 level.

⊘ NSI schools did not have a statistically significant impact on the outcome.

Note: The FAFSA sample consists of 143 NSI schools in Year 1, 143 NSI schools in Year 2, 113 NSI schools in Year 3, and 102 NSI schools in Year 4. The postsecondary enrollment sample consists of 139 NSI schools in Year 1, 141 NSI schools in Year 2, 110 NSI schools in Year 3, and 99 NSI schools in Year 4. The sample consists of four well-matched postsecondary enrollment NSI. All four NSI prioritized FAFSA completion and college enrollment (see Exhibit A.17).

Exhibit 11. Impacts of well-matched postsecondary enrollment NSI on FAFSA completion and college enrollment, by years of school participation



Source: Administrative student records for the 2014-15 through 2023-24 school years.

Note: Filled bars and asterisks (*) indicate that the difference between NSI schools and comparison schools is statistically significant at the 0.05 level, two-tailed test. The FAFSA sample consists of 143 NSI schools in Year 1, 143 NSI schools in Year 2, 113 NSI schools in Year 3, and 102 NSI schools in Year 4. The postsecondary enrollment sample consists of 139 NSI schools in Year 1, 141 NSI schools in Year 2, 110 NSI schools in Year 3, and 99 NSI schools in Year 4.

E. Impacts of the NSI on students who are Black, Latino, or experiencing poverty

The NSI initiative aimed to improve on-track outcomes and college enrollment for students who are Black, Latino, or experiencing poverty. As a result, the NSI partnered with districts that served high proportions of these students compared to districts nationally (Appendix Exhibit A.7). See Appendix A, Exhibits A.18–A.30 for detailed demographic information by outcome area.

We examined the impact of the NSI on these groups of students for three of the four outcome areas (8th- and 9th-grade on-track status and well-matched postsecondary enrollment) in schools' third year of participation (when they were expected to have full impact).[17] See Appendix Section A.4 for details on the analysis approach.

The impacts of the NSI on students who are Black, Latino, or experiencing poverty were similar to the impacts for students overall.

Overall, the impacts for Black, Latino, and students experiencing poverty were similar to those observed for the full student sample across all three outcome areas, with a few exceptions. Appendix Section B.6 provides additional details. This similarity in impacts is in part because Black students, Latino students, and students experiencing poverty make up a large portion of the full student sample.

F. Variation in impacts across NSI and schools

The analysis did not find significant differences in impacts across NSI for most 8th- and 9th-grade on-track outcomes, likely because the impacts for individual NSI were based on small samples.

The study was designed to measure the impact of the overall NSI initiative rather than the impact of individual NSI. Because the analysis for each NSI included a relatively small number of schools—about 13 on average—the impacts for an individual NSI are not measured precisely. This makes it difficult to distinguish small differences in impacts between NSI. Despite these limitations, we measured whether there were substantial differences in impacts across the 8th- and 9th-grade on-track NSI after schools' third year of participation.[18] We found that the variation in impacts across NSI was not statistically significant for nine of the 11 outcomes examined (Appendix Exhibit B.27). In the two cases where there was statistically significant variation in impacts, the differences appeared to be driven by one or two NSI that had a substantially larger or smaller estimated impact than other NSI.

We also examined variation in impacts across schools within each NSI and found substantial variation for all outcome areas.[19] These school-level estimates have low reliability because they are based on a small sample of students and capture both the effect of the NSI initiative and any school-specific effects (such as the impact of teachers, school leaders, or school-specific initiatives). Though the estimated impact of an individual school is not reliable, the large sample of schools along with substantial variation in estimated impacts across schools can be combined with data on school-level implementation of the NSI initiative to examine which aspects of the NSI approach are related to impacts on students.

III. Aspects of NSI implementation related to impacts

In addition to providing information on the impact of the NSI initiative on students, the NSI evaluation provides a unique opportunity to examine which aspects of the NSI approach may have contributed to any impacts on students. This analysis can help explain why some NSI schools were more successful at achieving meaningful impacts than others and inform which aspects of implementation to emphasize in future efforts. This section examines the extent to which *schools'* engagement in the NSI initiative's two core features are related to its impacts on students: (1) the school network and intermediary's supports, and (2) the use of CI to iteratively test and refine strategies. We also examine how a set of school- and district-level enabling conditions for the NSI work are related to impacts on students.

To measure the relationship between NSI implementation and impacts, we assessed whether NSI schools that had meaningful impacts on students are more (or less) likely to engage in each aspect of the network, intermediary supports, and CI compared to NSI schools that did not have meaningful impacts. We defined NSI schools as having meaningful impacts if they had at least a medium-sized positive impact, on average, on the outcomes their network prioritized (an average impact of at least 0.05 standard deviations on priority outcomes).[20] The analysis combines NSI across outcome areas, but we also describe how the pattern of findings differs by outcome area.[21] See Appendix C for additional details about the methods used in the analysis and Appendix D for details on the findings by outcome area.

There are a few key considerations for this analysis. The relationships identified are not causal (that is, we cannot conclude that any aspects of implementation related to impacts directly caused those impacts). In addition, the analyses by outcome area had smaller sample sizes, which can limit the ability to detect relationships even when they exist. Finally, schools' implementation was measured using survey and artifact data and may not perfectly capture schools' actual implementation; this measurement error can also limit the ability to detect relationships even when they exist.

A. Engagement in the network and supports

The NSI initiative relied on intermediaries to establish school networks, develop schools' capacity for CI, and provide opportunities for schools to learn from one another (see Bush-Mecenas et al. 2026 for details on intermediaries and their school networks). The success of these efforts depends, in part, on the extent to which NSI schools engaged with their intermediary (for example, to receive advice or coaching), engaged with other schools in their network (for example, to share resources or work together), and participated in the intermediary's network activities (for example, regular meetings of the school network). These steps were intended to build the skills of school CI teams and promote knowledge sharing among them, helping to make their efforts more effective. This section describes the extent to which these aspects of the NSI initiative were implemented by schools and demonstrate a relationship to impacts on students (see Appendix Exhibit C.2 for a description of each implementation measure).

Although most NSI schools engaged with their intermediary and other schools in their network, fewer schools reported frequent or in-depth engagement.

Seventy percent of NSI schools reported any engagement with their intermediary. However, fewer NSI schools reported deep engagement with their intermediary—39 percent engaged at least monthly and 22

percent received coaching at least twice a month (Appendix Exhibit D.1). Similarly, while half of NSI schools had any engagement with another school in their network, only 13 percent engaged with other schools at least monthly, and 31 percent reported providing advice to another school. These patterns of engagement were consistent across outcome areas.

NSI schools' engagement with other schools in their network was related to impacts on students, but their engagement with the intermediary and participation in network activities were not.

Exhibit 12 summarizes the relationships between NSI schools' engagement in the network or supports and their impacts, overall and by outcome area. A green check mark indicates that a particular aspect of implementation is positively related to impacts on students. In other words, NSI schools with meaningful impacts were more likely to engage in that aspect of the network or supports. Because of limited sample sizes for some analyses, we highlight differences that are statistically significant at the 0.05 level (dark green check mark) or statistically significant at the 0.1 level and at least 10 percentage points in magnitude (light green check mark). A black circle indicates there was no relationship between that particular aspect of implementation and impacts. In other words, NSI schools with and without meaningful impacts were similarly likely to engage in that aspect of the network or supports.

Exhibit 12. Relationship between engagement in the network and intermediary's supports and impacts on students, overall and by outcome area

	All outcome areas	8th-grade on-track NSI	9th-grade on-track NSI	Well-matched postsecondary enrollment NSI
Engagement with the intermediary				
Engaged with intermediary	⊘	⊘	⊘	⊘
Engaged with intermediary at least monthly	⊘	⊘	⊘	⊘
Engaged with intermediary on most CI topics	⊘	⊘	⊘	⊘
Received advice from intermediary	⊘	⊘	⊘	⊘
Received coaching at least two times per month	⊘	✕	⊘	⊘
Engagement with other schools in the network				
Engaged with one or more schools	✓	⊘	⊘	✓
Engaged with one or more schools at least monthly	⊘	⊘	✓	⊘
Worked with another school	⊘	⊘	⊘	⊘
Provided advice to another school	✓	⊘	⊘	✓
Network participation				
Spent at least 8 hours per month on network activities	⊘	⊘	✓	⊘

✓ = Positively related to impacts and statistically significant at the 0.05 level.

✓ = Positively related to impacts and statistically significant at the 0.1 level with a difference of at least 10 percentage points between schools with and without meaningful impacts on students.

✕ = Negatively related to impacts and statistically significant at the 0.1 level with a difference of at least 10 percentage points between schools with and without meaningful impacts on students.

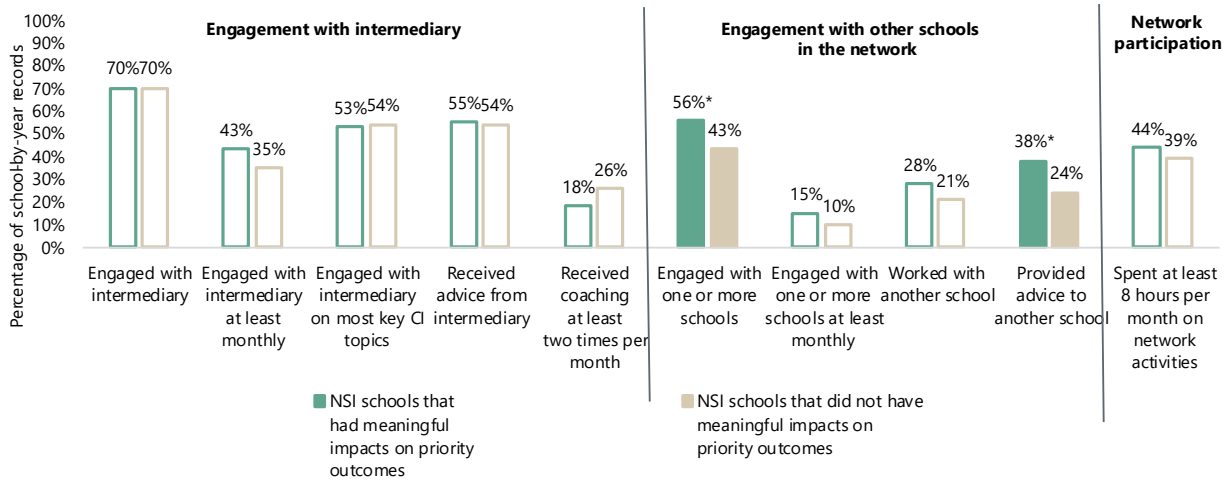
⊘ = Not related to impacts

Source: Impact estimates and Team Connections Survey data for the 2020-21 through 2023-24 school years.

Note: The sample sizes of school-by-year records include the following: 230 to 365 for all NSI, 80 to 94 for 8th-grade on-track NSI, 78 to 136 for 9th-grade on-track NSI, and 71 to 135 for well-matched postsecondary enrollment NSI.

NSI schools with meaningful impacts were more likely to engage with another school in their network than NSI schools without meaningful impacts. Exhibit 13 shows the percentage of NSI schools across outcome areas that engaged with a particular aspect of the network or supports, comparing NSI schools that had a meaningful impact with those that did not. Fifty-six percent of schools that had meaningful impacts engaged with another school in their network compared to 43 percent of schools that did not have meaningful impacts. Engaging with another school in the network was related to impacts for the well-matched postsecondary enrollment NSI. The 8th- and 9th-grade on-track NSI schools with meaningful impacts were more likely to engage with other schools, but the difference was not statistically significant. We examined whether the frequency or type of engagement with other schools was related to impacts but found that engaging with other schools at least monthly and working together with another school (such as analyzing data together) were not related to impacts, but providing advice to another school was related to impacts. These findings suggest there is value to participating in a network of schools, in particular through knowledge sharing among schools all focused on the same problem of practice.

Exhibit 13. Percentage of schools that engaged in the network and supports for schools with and without meaningful impacts on priority outcomes, overall



Source: Impact estimates and Team Connections Survey data for the 2015-16 through 2023-24 school years.

Note: Filled boxes and asterisks (*) indicate that the difference in implementation between schools was statistically significant at the 0.05 level, or statistically significant at the 0.10 level with a difference of at least 10 percentage points. Sample sizes for each measure range from 113 to 178 for school-by-year records with meaningful impacts and from 117 to 187 for school-by-year records without meaningful impacts.

NSI schools' engagement with the intermediary, including any engagement as well as deeper or more frequent engagement (for example, seeking advice from the intermediary, engaging with the intermediary on most CI topics, or engaging with the intermediary at least monthly), and their participation in network activities were not related to impacts on students. Any differences between NSI schools with meaningful impacts and those without meaningful impacts were small and not statistically significant. These patterns

are generally consistent in each outcome area. These findings suggest that direct engagement with an intermediary may be less important than an intermediary's efforts to encourage connections and knowledge sharing between schools. Intermediaries play a key role in connecting schools to one another and facilitating sharing, primarily through convenings and recurring meetings (Bush-Mecenas et al. 2026).

B. Engagement in CI

Intermediaries were expected to build schools' capacity to engage in CI to iteratively test and refine strategies that addressed a common challenge. The foundation focused intermediaries on CI that incorporated six core parameters (Exhibit 1, panel C) that mirror the six core principles of CI outlined by the Carnegie Foundation for the Advancement of Teaching.[22] These six principles are intended to promote a disciplined, inquiry-based approach to improvement efforts, helping to make them more effective (Bryk et al. 2015). (For additional information about NSI schools' engagement in CI, see Garet et al. 2026b.)

We examined whether schools' implementation of each core parameter related to impacts on students. The analysis includes five of the six core parameters:

1. Identifying a specific goal or aim for addressing a challenge
2. Describing the key "drivers" needed to accomplish the aim (the theory of practice improvement)
3. Selecting specific strategies—called change ideas—to achieve the aim
4. Conducting inquiry cycles (for example, a Plan-Do-Study-Act cycle) to test and refine the change ideas
5. Using data to inform the CI work

We excluded the core parameter for developing an understanding of the problem and its root causes because for many NSI schools that initial step occurred before the evaluation began. The foundation also expected that schools' CI activities would demonstrate a strong focus on equity, so we included a measure of whether schools considered equity when testing their change ideas, a key step in the CI process.[23]

We also measured *the extent to which* schools implemented two of the core parameters with greater depth. For the parameter focused on identifying a specific aim, we included a measure of whether the aim statement was specific, measurable, achievable, relevant, and time-bound (SMART). For the parameter focused on conducting inquiry cycles, we included measures for whether an NSI school *initiated* at least one inquiry cycle, *completed* at least one inquiry cycle (for example, reaching the Act stage of a Plan-Do-Study-Act cycle), *completed a disciplined* inquiry cycle (based on whether they used a structured protocol), and *adopted* a change idea at the end of an inquiry cycle.[24] See Appendix Exhibit C.3 for a description of each implementation measure.

A large majority of NSI schools implemented the core parameters of CI, but fewer schools implemented CI with greater depth.

Most NSI schools implemented each of the core parameters of CI included in the analysis. This ranged from 62 percent that identified a change idea that derived from drivers in the school's theory of practice improvement to 86 percent that used data to inform their CI work (Appendix Exhibit D.1). However, fewer NSI schools implemented CI at a greater depth. For example, while nearly three-quarters of schools (71

percent) identified a specific aim for their improvement work, only one-third developed an aim statement with evidence of all five SMART goal elements, a sign of effective goal setting. Similarly, nearly three-quarters of NSI schools (73 percent) initiated at least one inquiry cycle, but only 39 percent *completed* a cycle, 28 percent *completed a disciplined* inquiry cycle, and 13 percent *adopted* a change idea at the end of a cycle. Less than half (43 percent) of NSI schools demonstrated a focus on equity in their cycle work. With a few exceptions, these patterns were similar for each outcome area (Appendix Exhibits D.2-D.4).

Multiple aspects of CI were related to NSI impacts on students.

NSI schools that had meaningful impacts on students were more likely than schools that did not to implement two of the five core parameters of CI (identify a specific aim and develop a theory of practice improvement) and were more likely to adopt a change idea at the end of an inquiry cycle and focus on equity in their inquiry cycles (Exhibit 14). Identifying an aim statement with all five SMART goal elements had a strong relationship—43 percent of NSI schools with meaningful impacts implemented this aspect of CI compared to 28 percent of other schools (Exhibit 15). NSI schools with meaningful impacts were 9 percentage points more likely to develop a theory of practice. The NSI schools with meaningful impacts were also 9 percentage points more likely to complete an inquiry cycle, but this difference was marginally significant. Although a relatively small percentage of NSI schools moved beyond the testing and refining stages to adopt a change idea, NSI schools with meaningful impacts were more likely to adopt a change idea at the end of an inquiry cycle than schools without meaningful impacts (17 versus 10 percent). These findings suggest that certain aspects of CI—particularly those related to preparing for and completing inquiry cycles that lead to adoption of a change idea—may be more influential in driving impacts.

NSI schools with meaningful impacts were much more likely to demonstrate a focus on equity in their cycle work than other schools (53 versus 33 percent). There was a strong relationship between an equity focus in the cycle work and impacts for both the 8th-grade on-track NSI and well-matched postsecondary enrollment NSI. A strong focus on equity in the cycle work could take different forms. For example, the school CI team may have disaggregated data during the Study stage to examine outcomes for different groups of students or identified modifications to the change idea during the Act stage to rectify inequities. Having a strong focus on equity may have thus meant that teams were more intentional about focusing efforts and resources on helping students with the greatest needs, thereby helping to boost outcomes.

These aspects of CI were not related to impacts for all outcome areas. For example, developing a theory of practice improvement was strongly related to impacts for well-matched postsecondary enrollment schools but not for 8th- or 9th-grade on-track schools. The well-matched postsecondary enrollment NSI schools with meaningful impacts were 13 percentage points more likely to develop a theory of practice improvement than schools without meaningful impacts (Appendix Exhibit D.7).

More broadly, engagement in CI was not related to impacts for 9th-grade on-track schools. The differences in implementation between 9th-grade on-track schools with and without meaningful impacts tended to be smaller and not statistically significant. This lack of relationships could be explained if the 9th-grade on-track NSI impacts were primarily due to the types of strategies tested by the NSI and not schools' use of CI to test and refine those strategies (for example, if the 9th-grade on-track focus on

identifying and supporting students who were not on track was effective regardless of the schools' CI activities).

Exhibit 14. Relationship between engagement in CI and impacts on priority outcomes, overall and by outcome area

	All outcome areas	8th-grade on-track NSI	9th-grade on-track NSI	Well-matched postsecondary enrollment NSI
Identifying a specific aim^				
Developed an aim statement	✓	✓	⊘	⊘
Aim statement had evidence of all five SMART goal elements	✓	✓	⊘	✓
Defining a theory of practice^				
Developed a theory of practice improvement or driver diagram	✓	⊘	⊘	✓
Selecting change ideas^				
Identified a change idea that derived from drivers	⊘	⊘	⊘	✓
Conducting inquiry cycles^				
Initiated at least one inquiry cycle	⊘	⊘	⊘	⊘
Completed at least one inquiry cycle	⊘	⊘	⊘	⊘
Completed at least one disciplined inquiry cycle	⊘	⊘	⊘	⊘
Adopted a change idea	✓	⊘	⊘	⊘
Using data and measurement^				
Used data to inform CI work	⊘	⊘	⊘	⊘
Centering equity				
Focused on equity in inquiry cycles	✓	✓	⊘	✓

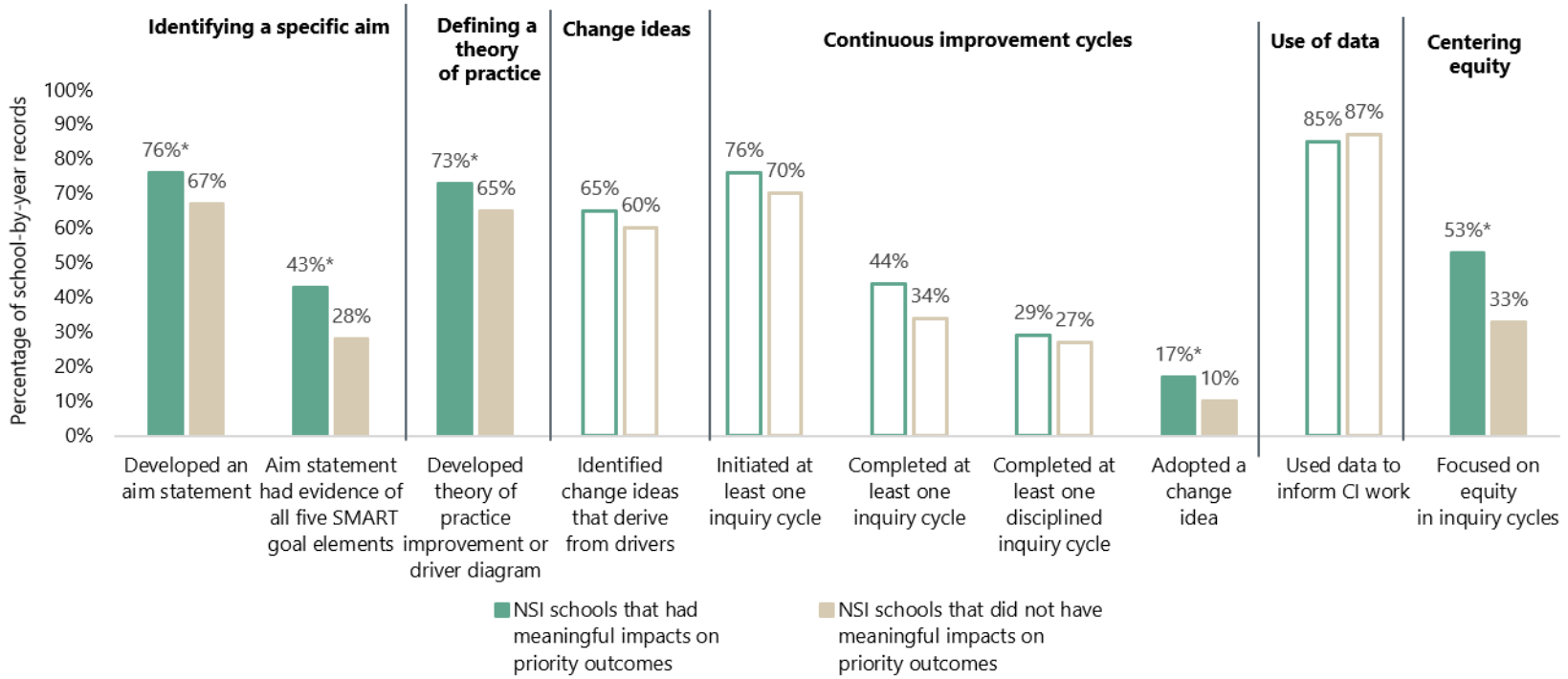
✓ = Positively related to impacts and statistically significant at the 0.05 level.

✓ = Positively related to impacts and statistically significant at the 0.1 level with a difference of at least 10 percentage points between schools with and without meaningful impacts on students.

⊘ = Not related to impacts.

Source: Impact estimates and school CI artifact data for the 2020-21 through 2023-24 school years.
Note: Carets (^) denote core parameters of CI identified by the Gates Foundation. The sample sizes of school-by-year records include the following: 405 to 543 for all NSI, 100 to 139 for 8th-grade on-track NSI, 136 to 170 for 9th-grade on-track NSI, and 169 to 234 for well-matched postsecondary enrollment NSI.

Exhibit 15. Percentage of schools that engaged in CI for schools with and without meaningful impacts on priority outcomes, overall



Source: Impact estimates and school CI artifact data for the 2015-16 through 2023-24 school years.

Note: Filled boxes and asterisks (*) indicate that the difference in implementation between schools was statistically significant at the 0.05 level, or statistically significant at the 0.10 level with a difference of at least 10 percentage points. Sample sizes for each measure range from 198 to 257 for school-by-year records with meaningful impacts and from 207 to 286 for school-by-year records without meaningful impacts.

There was limited evidence that schools' use of data to inform their CI work or identifying a change idea that derived from drivers were related to impacts on students. The lack of a relationship between data use and impacts may be due to the high percentage of schools that incorporated data into their CI activities (86 percent of schools); this limited variation in implementation can hinder the ability to detect a relationship between data use and impacts even if one exists. The lack of evidence might also suggest that *how* schools incorporate data into their CI work is more important than whether data are used at all. Identifying a change idea that derived from drivers was only related to impacts for the well-matched postsecondary enrollment NSI. This core parameter is an important step for another aspect of implementation that is related to impacts—adopting a change idea.

Engaging only in CI or only in the network and intermediary supports was not related to NSI impacts on students.

The foundation hypothesized that engaging in both CI and in the network and intermediary supports would reinforce each other. That is, schools that engaged more with their intermediary and other schools in their network would have been better able to implement CI processes effectively, and vice versa. Consistent with this hypothesis, an analysis by Garet et al. (2026a) found that NSI with denser networks (that is, those where more schools were connected to one another, rather than working in isolation) had stronger CI implementation. If these two aspects of the NSI approach reinforce each other, leading to more effective implementation of change ideas in schools, higher levels of engagement in both the network and in CI may also support schools' success in improving student outcomes.

Our main analysis examined relationships between impacts and engagement in the network and engagement in CI separately, as both sets of measures were not always available for the same set of schools (which would have further limited the number of schools available for the analysis, reducing the statistical power to detect relationships). However, we conducted an exploratory analysis that examined whether schools with meaningful impacts were more likely to engage in both their network and supports and CI. See Appendix Exhibit C.7 for details on the sample and measures used in this analysis.

Having a high level of overall implementation in just one of the two aspects of the NSI approach was not related to impacts. In addition, NSI schools that achieved meaningful impacts were less likely than schools without meaningful impacts to have *low engagement in both CI and in the network* (10 versus 25 percent).[25] NSI schools that achieved meaningful impacts also appeared more likely to have *high engagement in both CI and in the network* (39 versus 31 percent), although this difference was not statistically significant (Appendix Exhibit D.9). These exploratory results suggest that engaging in both CI and the network and intermediary supports—and not just one or the other—may facilitate whether the NSI approach is successful in improving outcomes, although additional research is needed to understand these relationships.

C. Enabling conditions

The success of the NSI initiative may depend on a series of school and district enabling conditions. Those include whether schools have time to participate in the network and conduct CI cycles, have buy-in and support from school and district leaders for their participation, have a stable core of school staff who engage in CI across years, and have a strong school climate where principals and teachers can collaborate

effectively. These enabling conditions were expected to influence the extent to which schools engaged in the network, intermediary supports, and CI, thereby facilitating impacts on student outcomes. See Appendix Exhibit C.4 for a description of each enabling condition.

Although some NSI schools described their schools and districts as supportive of the NSI work, others lacked support for their efforts.

Most school leaders supported the NSI work, though fewer were directly involved. Sixty-one percent of CI teams described their school leaders as actively supporting or enabling the NSI work, yet only 40 percent said that school leaders were very involved in the CI work (Appendix Exhibit D.1). District-level support was also less common, with only 40 percent of CI teams reporting that district staff actively supported or enabled the NSI work. In addition to direct support for the NSI work, the broader school climate may facilitate effective implementation. Over half of schools had above-average levels of effective leadership (55 percent) and teacher collaboration (51 percent)—two of the "5 Essentials" of a strong school climate to support school improvement efforts (Hart et al. 2021). Similar shares of schools had a stable CI team, in which most team members returned the following year, or reported that their schools provided planning time for their CI work, also key conditions for conducting CI.

Having a stable CI team and effective and supportive school leaders was related to impacts, but district support for the NSI work was not.

Exhibit 16 summarizes the relationships between NSI schools' impacts and school- and district-level enabling conditions for the NSI work, overall and by outcome area. NSI schools that achieved meaningful impacts were more likely to have stable CI teams in place. Fifty-eight percent of schools with meaningful impacts on students had stable CI teams compared to 44 percent of schools without meaningful impacts (Exhibit 17). This relationship was particularly strong among schools in the 8th-grade on-track and well-matched postsecondary enrollment NSI and was not present for the 9th-grade on-track NSI. For example, almost 60 percent of well-matched postsecondary enrollment NSI schools that had meaningful impacts had stable CI teams compared to 39 percent for NSI schools without meaningful impacts (Appendix Exhibit D.8). Having a stable CI team may enable schools to carry out the work more effectively by allowing team members to grow more skilled in CI and build on their learning from year to year. In fact, schools with stable CI teams had stronger CI implementation than other schools (Garet et al. 2026b).

In addition, schools with meaningful impacts were more likely to report above-average levels of effective and supportive school leadership. NSI schools with meaningful impacts had higher rates of school leaders that actively supported or enabled the NSI work (66 versus 55 percent). School leader support for the NSI work can help ensure alignment between NSI and school priorities as well as ensure more direct structures and resources for the NSI work are in place. In fact, Garet et al. (2026b) found that more supportive school leaders were associated with stronger CI implementation. One way for school leaders to support the NSI work is to ensure educators have planning time for the CI work. However, school support for planning time was not related to impacts on students. The NSI schools with meaningful impacts were more likely to report having effective leaders (62 percent versus 48 percent). The measure of effective leadership is based on teachers' reports on the extent of alignment between school initiatives and a central vision, trust between teachers and the principal, teacher influence over decision making, and

school leaders' instructional leadership. Taken together, the findings suggest that strong school leaders who are effective and supportive of the NSI work may be important for the success of the NSI.

Measures of district staff support for the NSI work and of collaboration among teachers in the school overall were not related to impacts.

Exhibit 16. Relationship between enabling conditions for the NSI work and impacts on students, overall and by outcome area

	All outcome areas	8th-grade on-track NSI	9th-grade on-track NSI	Well-matched postsecondary enrollment NSI
School and district supports				
School supported planning time for CI work	⊘	⊘	⊘	⊘
School had a stable CI team	✓	✓	⊘	✓
Principal was very involved in NSI work	⊘	⊘	⊘	⊘
School leaders actively supported or enabled NSI work	✓	⊘	⊘	⊘
District leaders actively supported or enabled NSI work	⊘	⊘	⊘	⊘
School climate				
School had collaborative teachers	⊘	⊘	⊘	**NA**
School had effective leaders	✓	✓	✓	**NA**

✓ = Positively related to impacts and statistically significant at the 0.05 level.

✓ = Positively related to impacts and statistically significant at the 0.1 level with a difference of at least 10 percentage points between schools with and without meaningful impacts on students.

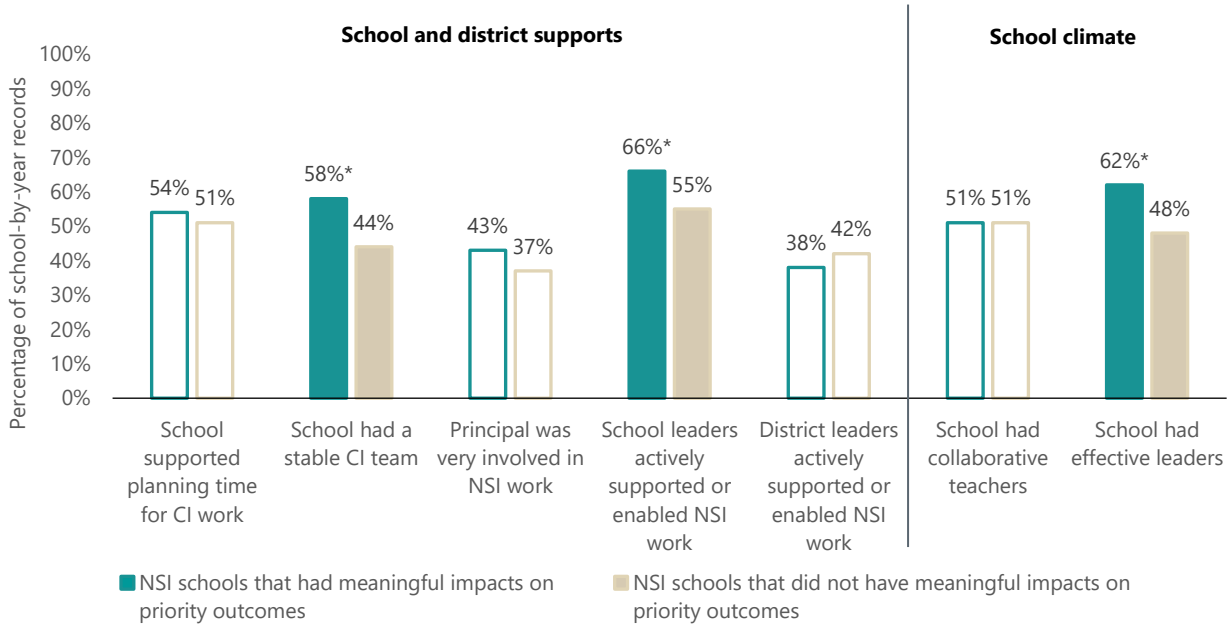
⊘ = Not related to impacts.

NA = Not available.

Source: Impact estimates and Team Connections Survey, School Leader Survey, school CI team rosters, and school climate survey data for the 2018-19 through 2023-24 school years.

Note: The sample sizes of school-by-year records include the following: 234 to 602 for all NSI, 82 to 215 for 8th-grade on-track NSI, 79 to 260 for 9th-grade on-track NSI, and 73 to 250 for well-matched postsecondary enrollment NSI.

Exhibit 17. Percentage of schools that had enabling conditions for the NSI work for schools with and without meaningful impacts on priority outcomes, overall



Source: Impact estimates and Team Connections Survey, School Leader Survey, school CI team rosters, and school climate survey data for the 2015-16 through 2023-24 school years.

Note: Filled boxes and asterisks (*) indicate that the difference in implementation between schools was statistically significant at the 0.05 level, or statistically significant at the 0.10 level with a difference of at least 10 percentage points. Sample sizes for each measure range from 115 to 284 for school-by-year records with meaningful impacts and from 119 to 318 for school-by-year records without meaningful impacts.

IV. Conclusion

Despite continued growth in the use of network-based improvement approaches in education, there is limited evidence on its effectiveness in improving student outcomes. This study helps address this gap by providing rigorous evidence on the Gates Foundation's NSI initiative that scaled up networked-based improvement across the country. This study suggests that networked-based improvement is a promising strategy for improving student outcomes. Despite disruptions from the COVID-19 pandemic, the NSI initiative succeeded in improving some of the targeted student outcomes. In addition, schools with meaningful impacts were more likely to implement core features of the NSI approach, providing further evidence of its promise. However, the NSI work was not effective in all contexts. For example, NSI focused on improving teachers' ELA instruction did not impact students' ELA achievement, and the well-matched postsecondary enrollment NSI improved FAFSA completion but not college enrollment. This raises important questions about why the approach is effective in some contexts or for some outcomes but not others.

The efforts of the Carnegie Foundation and Gates Foundation have helped coalesce the field around a common understanding of network-based improvement. However, the NSI evaluation's implementation study of CI (Garet et al. 2026b) suggests that NSI took a wide range of approaches to the work. The findings in this report from the analysis relating impacts to implementation suggest aspects of network-based improvement that may be particularly important for its effectiveness. For example, developing an aim statement and theory of practice improvement—two of the Gates Foundation's core parameters of CI—were related to impacts on students. The study also points to the potential importance of embedding a focus on equity in the work and maintaining a stable CI team. However, additional studies are needed to build a stronger evidence base on the key features of network-based improvement to inform future efforts.

References

Achieve. "On Track or Falling Behind? How States Include Measures of 9th Grade Performance in Their ESSA Plans." 2018. https://www.achieve.org/files/On-Track-Brief.pdf.

Allensworth, E.M., J.A. Gwynne, P. Moore, and M. de la Torre. "Looking Forward to High School and College: Middle Grade Indicators of Readiness in Chicago Public Schools." University of Chicago Consortium on Chicago School Research, 2014. https://files.eric.ed.gov/fulltext/ED577585.pdf.

Allensworth, E.M., and J.Q. Easton. "What Matters for Staying on Track and Graduating in Chicago Public High Schools: A Close Look at Course Grades, Failures, and Attendance in the Freshman Year." University of Chicago Consortium on Chicago School Research, 2007. https://consortium.uchicago.edu/publications/what-matters-staying-track-and-graduating-chicago-public-schools.

Allensworth, E.M., J. Nagaoka, and D. W. Johnson. "High School Graduation and College Readiness Indicator Systems: What We Know, What We Need to Know." University of Chicago Consortium on School Research, 2018. https://files.eric.ed.gov/fulltext/ED589733.pdf.

Angrist, J.D., S.M. Dynarski, T.J. Kane, P.A. Pathak, and C.R. Walters. "Inputs and Impacts in Charter Schools: KIPP Lynn." American Economic Review, vol. 100, no. 2, 2010, pp. 239–243. http:/doi.org/10.1257/aer.100.2.239.

Bettinger, E.P., B. Long, P. Oreopoulos, and L. Sanbonmatsu. "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment." Quarterly Journal of Economics, vol. 127, no. 3, 2012, pp. 1205–1242. https://doi.org/10.1093/qje/qjs017.

Bos, J.M., S. Dhillon, and T. Borman. "Building Assets and Reducing Risks (BARR) Validation Study: Final Report." American Institutes for Research, 2019. https://www.air.org/sites/default/files/2021-07/AIR-BARR-Validation-Final-Report-April-2019.pdf.

Bruce, M., Bridgeland, J.M., Fox, J.H., and R. Balfanz. "On Track for Success: The Use of Early Warning Indicator and Intervention Systems to Build a Grad Nation." Civic Enterprises, 2011. https://files.eric.ed.gov/fulltext/ED526421.pdf.

Bryk, A.S., L.M. Gomez, A. Grunow, and P.G. LeMahieu. "Learning to Improve: How America's Schools Can Get Better at Getting Better." Harvard Education Press, 2015. https://www.education.pitt.edu/wp-content/uploads/2024/04/LearningToImprove_2015.pdf.

Bush-Mecenas, S., R. Herman, K. Christianson, S.L. Wrabel, P. Nguyen, S. Zelazny, T. Berglund, et al. "Evaluation of the Networks for School Improvement Initiative—How Network Hubs Develop and Support Continuous Improvement Networks: Final Report." RAND Corporation, 2026. www.rand.org/pubs/research_reports/RRA4409-1.html.

Cannon, S., and S. Goldrick-Rab. "Too Late? Too Little: The Timing of Financial Aid Applications." Wisconsin HOPE Lab, 2016. https://www.luminafoundation.org/wp-content/uploads/2017/08/too-late-too-little.pdf.

Castleman, B.L., and L.C. Page. "A Trickle or a Torrent? Understanding the Extent of Summer 'Melt' Among College-Intending High School Graduates." Social Science Quarterly, vol. 95, no. 1, 2014, pp. 202–220. https://doi.org/10.1111/ssqu.12032.

Dee, T.S. "Higher Chronic Absenteeism Threatens Academic Recovery from the COVID-19 Pandemic." Proceedings of the National Academy of Sciences, vol. 121, no. 3, 2024a. https://doi.org/10.1073/pnas.2312249121.

Dee, T. S. "Understanding the Promise and Reality of Continuous Improvement in US Public Schools." Hoover Institution, Stanford University, November 2024b. https://www.hoover.org/sites/default/files/research/docs/Dee_PromisesAndReality_web-241107.pdf.

Demers, A., I. Nichols-Barrer, E. Steele, M. Bartlett, and P. Gleason. "Long-Term Impacts of KIPP Middle and High Schools on College Enrollment, Persistence, and Attainment." Mathematica, 2023. https://www.mathematica.org/publications/long-term-impacts-of-kipp-middle-and-high-schools-on-college-enrollment-persistence-and-attainment.

Faria, A.M., N. Sorensen, J. Heppen, J. Bowdon, S. Taylor, R. Eisner, and S. Foster. "Getting Students on Track for Graduation: Impacts of the Early Warning Intervention and Monitoring System After One Year." Institute of Education Sciences, 2017. https://ies.ed.gov/use-work/resource-library/report/impact-study/getting-students-track-graduation-impacts-early-warning-intervention-and-monitoring-system-after-one.

Feygin, A., L. Nolan, A. Hickling, and L. Friedman. "Evidence for Networked Improvement Communities: A Systematic Review of the Literature." American Institutes for Research, 2020. https://www.air.org/sites/default/files/2021-06/NIC-Systematic-Review-Report-123019-Jan-2020.pdf.

Gallagher, H.A., B.W. Cottingham, and L. Faw. "Evaluation of the Breakthrough Success Community: 2019–20 Through 2022–23." Policy Analysis for California Education, February 2025. https://edpolicyinca.org/publications/evaluation-breakthrough-success-community.

Garet, M.S., L.B. Stein, R.C. Eisner, K.T. Jones, M.J. Farmer, S. Mitrano, B.C. Gamse, et al. "Evaluation of the Networks for School Improvement Initiative—School-Level Implementation of Continuous Improvement: Interim Report." American Institutes for Research, April 2024. https://www.air.org/system/files/2024-04/NSI-Evaluation-School-Level-Implementation-of-CI-April-2024.pdf.

Garet, M.S., R.C. Eisner, S.L. Wrabel, M.J. Farmer, T. Berglund, D. Blair, J. Schweig, and S. Bush-Mecenas. "Evaluation of the Networks for School Improvement Initiative: Networks, Coaching, and the Implementation of Continuous Improvement in Schools." American Institutes for Research, 2026a. https://www.air.org/project/evaluation-networks-school-improvement-nsi-initiative.

Garet, M.S., L.B. Stein, R.C. Eisner, M.J. Farmer, S. Mitrano, D. Blair, E.G. Wilson, et al. "Evaluation of the Networks for School Improvement Initiative: School-Level Implementation of Continuous Improvement." American Institutes for Research, 2026b. https://www.air.org/project/evaluation-networks-school-improvement-nsi-initiative.

Gleason, P.M., C.C. Tuttle, B. Gill, I. Nichols-Barrer, and B. Teh. "Do KIPP Schools Boost Student Achievement?" Education Finance and Policy, vol. 9, no. 1, 2014, pp. 36–58. https://www.jstor.org/stable/educfinapoli.9.1.36.

Hart, H., C. Young, A. Chen, N. Kheraj, and E.M. Allensworth. "5Essentials Survey in CPS: School Improvement and School Climate in High-Poverty Schools." UChicago Consortium on School Research, 2021. https://consortium.uchicago.edu/sites/default/files/2021-12/5Essentials%20Survey%20in%20CPS_Improvement-Dec%202021-Consortium_0.pdf.

Hoxby, C.M., and C. Avery. "The Missing 'One-Offs': The Hidden Supply of High-Achieving, Low-Income Students." Working Paper 18586. National Bureau of Economic Research, 2012. https://www.nber.org/papers/w18586.

Ideas42. "Increasing FAFSA Applications: Making College More Affordable." 2015. https://www.ideas42.org/wp-content/uploads/2015/12/FAFSA-Brief.pdf.

Johnson, M., J. Max, T. Mussadiq, B. Williams, S. Robles, and M. Bennett. "Evaluation of the Networks for School Improvement Initiative: Student Outcomes Interim Report." Mathematica, 2024. https://www.mathematica.org/publications/evaluation-of-the-networks-for-school-improvement-initiative-student-outcomes-interim-report.

Kim, S.W. "Early Impacts of the FAFSA Requirement in Texas." Annenberg Institute at Brown University, 2025. https://edworkingpapers.com/sites/default/files/ai25-1130.pdf.

Kraft, M.A. "Interpreting Effect Sizes of Education Interventions." Educational Researcher, vol. 49, no. 4, 2020, pp. 241–253. https://doi.org/10.3102/0013189X20912798.

Liu, J., M. Lee, and S. Gershenson. "The Short- and Long-Run Impacts of Secondary School Absences." Journal of Public Economics., vol. 199, July 2021, article 104441. https://doi.org/10.1016/j.jpubeco.2021.104441.

National Student Clearinghouse Research Center. "Current Term Enrollment Estimates Report Fall 2020." National Student Clearinghouse, 2020. https://nscresearchcenter.org/wp-content/uploads/CTEE_Report_Fall_2020.pdf.

National Student Clearinghouse Research Center. "Current Term Enrollment Estimates Report Fall 2021." National Student Clearinghouse, 2021. https://nscresearchcenter.org/wp-content/uploads/CTEE_Report_Fall_2021.pdf.

Neild, R.C., and R. Balfanz. "Unfulfilled Promise: The Dimensions and Characteristics of Philadelphia's Dropout Crisis, 2000-2005." Center for Social Organization of Schools, Johns Hopkins University, 2006. https://files.eric.ed.gov/fulltext/ED538341.pdf

Page, L.C., and J. Scott-Clayton. "Improving College Access in the United States: Barriers and Policy Responses." Working Paper 21781. National Bureau of Economic Research, 2015. https://www.nber.org/system/files/working_papers/w21781/w21781.pdf.

Page, L.C., B.L. Castleman, and K. Meyer. "Customized Nudging to Improve FAFSA Completion and Income Verification." Educational Evaluation and Policy Analysis, vol. 42, no. 1, pp. 3-21, 2020. https://doi.org/10.3102/0162373719876916.

Reed, S., M. Kurlaender, P. Martorell, D. Rury, A.H. Negrete, P. Perry, J. Moldoff, and R. Fuller. "College Uncertainties: California High School Seniors in Spring of 2020." The California Student Aid Commission and the California Education Lab at UC Davis, December 2020. https://www.csac.ca.gov/sites/main/files/file-attachments/csac_survey_report_20201217.pdf?1608251478.

Roderick, M., J. Nagaoka, V. Coca, and E. Moeller. "College Choice: How Students Make Decisions About Postsecondary Pathways." The To&Through Project at the University of Chicago, 2008. https://toandthrough.uchicago.edu/sites/default/files/uploads/documents/UChiToThrough_IssueBrief_COLLEGE-CHOICE.pdf.

Russell, J.L., D.J. Peurach, and A.S. Byrk (eds.). "Educational Improvement Networks: Exploring the Development of Scientific-Professional Learning Communities" Special issue. Peabody Journal of Education, vol. 100, no. 1, 2025. https://www.tandfonline.com/toc/hpje20/100/1?nav=tocList.

Slaughter, A., R.C. Nield, and M. Crofton. "Ready from the Start: Identifying and Supporting At-Risk Ninth Graders from Their Earliest Days in High School." The Philadelphia Education Research Consortium, 2018. https://files.eric.ed.gov/fulltext/ED613888.pdf.

Visscher, A.J., N. Dmoshinskaia, M. Pellegrini, and A. Rey-Naizaque. "(When) Do Teacher Professional Development Interventions Improve Student Achievement? A Meta-Analysis of 128 High-Quality Studies." Educational Research Review, vol. 49, 2025, article 100742. https://doi.org/10.1016/j.edurev.2025.100742.

Notes

[1] The School District of Philadelphia and the Texas Education Agency are among the district and state education agencies that provided data for the evaluation. The School District of Philadelphia requested the following acknowledgment be included: "Source: Derived from data provided by The School District of Philadelphia. © 2015 The School District of Philadelphia. All rights reserved." The Texas Education Agency requested the following disclaimer be included: "The conclusions of this research do not necessarily reflect the opinions or official position of the Texas Education Agency, the Texas Higher Education Coordinating Board, the Texas Workforce Commission, or the State of Texas." The study also includes Advanced Placement exam taking data provided by the College Board. The College Board requested that the following acknowledgement be included: "Source: Derived from data provided by the College Board. Copyright © 2016-2024 The College Board. www.collegeboard.org."

[2] For an evaluation of the implementation and impacts of one NSI during its first two years, see Gallagher et al. (2025). For a systematic review of evidence for network-based CI in education, see Feygin et al. (2020). Complementary studies of school networks in the context of the NSI initiative are available in Russell et al. (2025).

[3] We excluded six 8th- and 9th-grade on-track NSI for which within-district comparisons were not feasible because the NSI worked with all or almost all the schools in a district. We also excluded one college-ready on-track NSI that worked with smaller high schools designed to re-engage students who had dropped out or fallen behind on credits, because we were not able to identify comparison schools with similar characteristics. Finally, we excluded KIPP's well-matched postsecondary enrollment NSI because we could not identify a comparison group of KIPP schools for the analysis. We did not compare outcomes for KIPP schools to other traditional public schools or charter schools because the KIPP model has evidence of impacts on student outcomes, making it difficult to disentangle the effect of KIPP from the effect of the NSI (Demers et al. 2023; Gleason et al. 2014; Angrist et al. 2010).

[4] The analysis relating NSI implementation to impacts excludes the college-ready on-track NSI because schools' implementation may have been less directly related to the outcomes measured in the impact analysis. This is due to the specifics of each network's improvement work and the data available for them. For example, two college-ready on-track NSI worked primarily with 9th- and 10th-grade students, whereas we measured impacts for 11th- and 12th-grade students. In addition, one college-ready on-track NSI paused its NSI activities in the third year of its grant because of turnover in district leadership. The results of this analysis were similar when college-ready on-track NSI schools were included.

[5] One 8th-grade on-track NSI, City Year, used an early warning and response approach to improve attendance, reduce suspensions, and improve course performance in math and ELA. City Year developed a change package focused on student belonging and resilience as enablers of learning. Although it prioritized achievement-related outcomes, its strategy centered on strengthening students' sense of belonging in school as the primary pathway to improved performance, rather than focusing on enhancements to teacher instruction in a specific subject area.

Instructional NSI were more likely to test change ideas in a specific classroom or a small group of students within a classroom, compared to other NSI that were more likely to test change ideas with all students in a grade (Garet et al. 2024). Some change ideas may have been tested on a small group of students with the intent of scaling up the change idea to all students in the grade, whereas the goal of other change ideas may have been to improve outcomes for a subset of students. Data on which students the NSI worked with were not available, so the impact analysis sample includes all 8th-grade students in NSI schools who have non-missing data. The impact estimates may therefore understate the impact of the NSI in cases

where the change ideas NSI tested were intended to improve outcomes for a subset of 8th-grade students.

[6] Information on the change ideas in Boxes 2, 3, 5, and 6 are from documents collected from intermediaries by the NSI evaluation team and publicly available online sources. The examples shown are illustrative, not exhaustive, of the types of strategies tested within each NSI.

[7] Box 1 provides details about how we defined impacts as small, medium, or large following the classification system proposed in Kraft (2020).

[8] The analysis of math test score impacts included 114 NSI schools in Year 3, but only 56 schools in Year 1 because many schools joined the NSI in the 2019-20 or 2020-21 school year when test scores were not available due to the COVID-19 pandemic. The analysis included fewer schools in Year 4 (87 NSI schools) than in Year 3 because some schools joined the NSI late in the grant and did not reach their fourth year of participation in time to be included in the analysis.

[9] Core course GPA is based on math, ELA, science, and social studies courses.

[10] The foundation's overall on-track indicator is a high bar for students to reach for two reasons. First, it includes a larger number of outcomes than the on-track indicators typically used in research and policy. For example, studies of students in Philadelphia and Chicago relied on two course-related indicators to determine which students are on-track at the end of 9th grade (Allensworth et al., 2014; Slaughter et al., 2018). Similarly, many states that include an on-track indicator in their accountability system only use course attainment outcomes to define on-track status (Achieve, 2018). Second, the foundation set on-track thresholds that tend to be higher than other studies. For example, based on a synthesis of research on early-warning indicator approaches (Bruce et al., 2011), some studies set a 90 percent attendance rate threshold (compared with 96 percent for the NSI Initiative) and a GPA threshold of 2.0 (compared with 3.0 GPA for the NSI Initiative).

[11] Three 9th-grade on-track NSI implemented change ideas related to equitable grading with strategies such as allowing students to retake tests or complete missing assignments, or making grading practices more transparent to students. A small number of schools tested strategies that involved replacing grades of zeros for missing assignments with a minimum grade such as 50 percent. We measured impacts when excluding the three NSI that tested equitable grading strategies and found the impacts on course-related outcomes remained positive and statistically significant when excluding those NSI (Appendix Exhibit B.26).

[12] The NSI in Florida led by AIR focused on improving instruction for algebra teachers who mostly taught 9th- and 10th-grade students, and two-thirds of schools in the NSI led by the Building Assets, Reducing Risks (BARR) Center focused on 9th- and 10th-grade students.

[13] The new Denver Public Schools NSI included some schools that were part of the original network and some that were new to the NSI work. However, due to the timing of when the new schools joined, those new schools do not enter the analysis of impacts after three years of participation.

[14] Worryingly, large proportions of aspiring college students have historically completed the FAFSA after deadlines have already passed for state educational grants, with about half of economically disadvantaged or first-generation students doing so in 2014-15 (Cannon and Goldrick-Rab 2016).

[15] Between 2020-21 and 2021-22, FAFSA completion rates through December increased by about 7 percentage points among non-NSI schools in Texas and by about 8 percentage points for NSI schools. In 2022-23 among non-NSI schools in Texas, FAFSA completion rates through December increased by only 2 percentage points.

[16] An experiment that provided help with FAFSA filing to low-income individuals receiving tax preparation assistance from H&R Block increased FAFSA completion rates by 16 percentages points (Bettinger et al. 2012). In contextualizing NSI schools' impacts on FAFSA filing rates, we prioritized comparisons to interventions focusing on high school students that schools could implement. Part of the H&R Block intervention involved importing information from parents' tax returns into the FAFSA form, which was not comparable to the school-based interventions the NSI used.

[17] We do not present impact of the college-ready on-track NSI for students who were Black, Latino, or experiencing poverty due to small sample sizes in that analysis.

[18] We do not report on tests for significant variation in impacts across NSI for the college-ready on-track or well-matched postsecondary enrollment NSI due to small sample sizes. There are only three or four NSI included in each analysis.

[19] We analyzed the variation in school-level NSI impacts, similar to the analysis of variation across NSI shown in Appendix Exhibit B.27. We found that differences in school-level impacts were statistically significant (at the 0.01 level) for each outcome. This test provides information on whether there is meaningful variation across NSI schools in their impacts on student outcomes. This variation in impacts could be due to differences in NSI impacts across schools as well as differences in underlying school effectiveness that are not related to the impacts of the NSI initiative.

[20] For example, if a school's network prioritized GPA and attendance rates, it was defined as having a meaningful impact in a given year if its average impact across GPA and attendance that year was at least 0.05 standard deviations. Across all outcome areas, approximately 50 percent of schools in a given year were considered to have achieved meaningful impacts on priority outcomes (Appendix Exhibit C.6).

[21] For the main analysis, which combines schools across outcome areas, we used a 5 percent statistical significance level to interpret the results. Because the analyses by outcome area have smaller sample sizes, we also report on the 10 percent statistical significance level to reduce the risk of mistakenly concluding there were no relationships, given the more limited statistical power available for these analyses.

[22] See https://www.carnegiefoundation.org/about/improvement-in-education/six-core-principles-improvement/.

[23] The study measured whether there was evidence of attention to equity in the Act stage of an inquiry cycle along any of the four dimensions of equity that comprise the NSI evaluation's equity framework. Those four dimensions include access (whether students have equitable access to supports and opportunity), achievement (whether students are enabled to achieve equitable outcomes), identity (whether students are able to see themselves and other favorably), or agency (whether students have the opportunity to use their voices).

[24] Schools could proceed at the end of a cycle by adopting the change idea, modifying the change idea and testing it again, or abandoning it.

[25] High engagement was defined as above-average engagement based on a measure of the proportion of implementation aspects that a school engaged in. For engagement in the network, schools were considered to have high (above-average) engagement if they implemented at least four of the 10 aspects the study examined (Appendix Exhibit C.2). For engagement in CI, schools were considered to have high (above-average) engagement if they implemented at least five of the 10 aspects the study examined (Appendix Exhibit C.3).

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