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Engaging Districts for School Progress: A Baseline Evaluation of the District Continuous Improvement Framework in Missouri

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Executive Summary

The Region 12 Comprehensive Center (R12CC), funded under a federal grant from the U.S. Department of Education, conducted this evaluation to determine the differences in the processes and outcomes for Missouri school districts using the state's District Continuous Improvement (DCI) Framework and those using internally-developed approaches.

The goal of DCI is to integrate effective academic and behavioral practices into a framework for achieving exceptional student outcomes. It is undergirded by collaboration between districts, the Missouri Department of Elementary and Secondary Education (DESE), and the Regional Professional Development Centers. Districts using the DCI Framework receive guidance, professional development, and networking opportunities which focus on building district capacity to select, implement, and evaluate evidence-based teaching practices; improve school-based coaching; and engage in data-driven decision-making.

R12CC used a mixed-methods approach for the evaluation which spans the 2019–2020 school year. We reviewed multiple sources of data: (1) documents, including samples of school improvement plans from both DCI districts and Non-DCI districts, and the state's review process and guidance/policy documents for school improvement plans; (2) survey responses from principals and superintendents; (3) interview data from principals and superintendents; and (4) student demographics and achievement.

This evaluation focused on the following research questions:

- To what extent are there similarities or differences in the school improvement plans developed by DCI districts and those developed by districts using internally-developed improvement approaches?
- What are the perceptions of district and school leaders of the DCI Framework and the districts' internally-developed improvement approaches?
- What aspects of school improvement planning do district and school leaders perceive as most beneficial?
- To what extent do student demographics and achievement differ between districts using the DCI Framework and those using internally-developed approaches?

Findings

The Improvement Process in Action

DCI and Non-DCI Plans

- A review of school improvement plans and district Comprehensive School Improvement Plans from DCI and Non-DCI districts shows no notable differences in terms of the processes used to develop the plans, the structure of the plans, types of goals selected, and implementation approach.

- Plans show signs of districts generally following the eight-step planning process in the Missouri School Improvement Program, with the following noted:
  - The alignment of DCI district action plans to Comprehensive School Improvement Plans is not readily apparent.
  - The goals on some plans do not meet the expectations of specific, measurable, achievable, relevant, and timely (SMART) goals.
  - The goals and measures of progress in some plans are poorly aligned.

Perceptions of the Causes of Underperformance

- Principals and superintendents from both DCI and Non-DCI districts perceive the causes of underperformance at the school level similarly.
- Principals and superintendents indicate that the causes of underperformance are connected to instructional practices, expectations for students, data literacy, resources, and staff leadership.

Principals' Perceptions of Support

- Compared with principals in Non-DCI districts, a higher percentage of principals in DCI districts indicate that they receive professional development which focuses on facilitating professional conversations, giving effective instructional feedback, using effective instructional strategies, and making data-driven decisions.

Perceptions of the School Improvement Process

Most Beneficial Aspect of School Improvement

- Principals and superintendents believe that focusing on data analysis, taking strategic action steps, and developing a school culture that encourages change, reflection, and collaboration are cornerstones of an impactful school improvement process.
- Leaders value the role of engagement and collaboration when assessing needs and identifying strategic action steps for improvement.

Most Effective Factor in Advancing School Improvement

- Superintendents believe school leadership is a key to successful school improvement.
- Both principals and superintendents note that building the capacity of teachers is pivotal.

Superintendents' Views on School Improvement

- Both DCI and Non-DCI superintendents provide similar types of assistance to their schools.
- Superintendents' selection of a school improvement approach, DCI or Non-DCI, is related to their familiarity with the DCI Framework or general satisfaction with internally-developed approaches to improvement.
- DCI superintendents believe the structure and systematic nature of the state approach is beneficial.
- Superintendents are appreciative of the assistance offered by DESE and the RPDC staff.

Suggestions from Principals and Superintendents

Professional Development: Topics and Delivery

- Principals and superintendents identify specific topics for professional development or assistance from DESE that they would like to receive for their schools. They are particularly interested in receiving professional development that focuses on practical applications of concepts and is differentiated according to the size of the district, the previous knowledge base of the school staff, and the grade level of participants.
- Some superintendents have concerns related to consistency in the quality of professional development, or about professional development that requires principals and teachers to be out of school.

Student Demographics and Achievement

Student Demographics

- There are no statistically significant differences in terms of student demographics between DCI and Non-DCI districts.
- Comprehensive School Improvement (CSI) schools in DCI districts and CSI schools in Non-DCI districts both have high percentages of economically disadvantaged students and African American students.

Student Achievement

- At the district level, the differences in proficiency rates of students for English language arts (ELA) and mathematics were not statistically significant between DCI and Non-DCI districts. A statistically significant lower percentage of students in DCI districts were proficient in science, compared to students in Non-DCI districts.
- At the school level, the differences in proficiency rates of students for mathematics and science were not statistically significant between CSI schools in DCI districts and CSI schools in Non-DCI districts. CSI schools in DCI districts had a statistically significant higher percentage of students who were proficient in ELA than CSI schools in Non-DCI districts.
- After controlling for student demographics, the DCI and Non-DCI districts were performing similarly in ELA, mathematics, and science.

Recommendations and Next Steps

The DCI Framework is a key vehicle through which DESE provides school improvement assistance to a growing number of participating districts across the state. DCI districts find the professional development, improvement-related materials, and overall engagement with DESE and RPDC staff to be helpful. The following issues and recommendations serve as the basis for refining the state's DCI Framework to building district and school capacity.

Areas for Improvement

Issue One: Implementation Action Plans

- Develop a quality rating rubric for DCI implementation action plans.
- Build a repository of DCI implementation action plans.
- Provide a resource library of annotated DCI implementation action plans.

Issue Two: DCI Collaborative

- Develop a DCI Collaborative.

Issue Three: Impact of DCI Framework on Student Learning

- Establish a multi-year plan for collecting and analyzing student achievement data from both DCI and Non-DCI districts.

Issue Four: Communications

- Launch information outreach efforts to broaden districts' awareness of the full range of DESE supports.

Summary

DESE is directly supporting district and school improvement efforts through the DCI Framework. By focusing rigorously on capacity building, the state is positioned to enhance the learning of all students.

Chapter One: Introduction and Context

The Region 12 Comprehensive Center (R12CC),[1] funded under a federal grant from the U.S. Department of Education, conducted this evaluation to determine the differences in the processes and outcomes for Missouri school districts using the state's District Continuous Improvement Framework and those using internally-developed approaches.

Background of District Continuous Improvement

The Missouri School Improvement Program (MSIP) is the state's school accountability system for reviewing and accrediting public schools in Missouri. MSIP began in 1990 and focuses on continuous improvement for all schools, the preparation of each student for life beyond high school, and promoting practices that lead to healthy school systems. "The local board of education adopts and district leadership implements a Comprehensive School Improvement Plan (CSIP) to ensure the achievement and success of all students" (DESE, 2017, p. 4). MSIP describes an eight-step process to build these plans.

"The CSIP serves as a long-range planning tool for addressing student performance and describes a specific set of actions to be undertaken relative to these issues. It is not a document that simply identifies 'what' the measurable objectives/goals for improvement will be; it is a document that details 'how' the district intends to make the desired improvements" (DESE, 2017, p. 4). School plans build off the CSIP for specific school improvement needs.

DESE provides support for implementing school improvement through a district-wide approach: District Continuous Improvement (DCI). The goal of DCI is to integrate effective academic and behavioral practices into a framework for achieving exceptional student outcomes.

The DCI Framework is undergirded by collaboration between districts, DESE, and the Regional Professional Development Centers (RPDCs).[2] Districts using the DCI Framework (DCI districts) receive guidance, professional development, and networking opportunities which focus on building district capacity to select, implement, and evaluate evidence-based teaching practices; improve school-based coaching; and engage in data-driven decision-making. Networking occurs at both the regional and statewide levels.

The DCI Framework was initiated in the 2017–2018 school year as a joint effort of DESE, RPDCs, and 15 districts (with 91 schools) which were identified as the Missouri Model Districts. From the beginning, DESE's goal has been to develop a "cohesive system of support that can be implemented statewide in any district, regardless of demographics" (MoEdu-SAIL, 2020, p. 1). The Missouri Model Districts expanded to 49 districts (207 schools) in 2018–2019, serving as a testing ground

[1] The Region12 Comprehensive Center, serving Colorado, Kansas and Missouri, is one of 19 regional centers supporting state education agencies in the implementation of evidence-based programs to improve educator and student outcomes.
[2] Missouri has nine regional RPDCs. Established by DESE, RPDCs are designed to serve the professional development needs of public school teachers and leaders.

for processes and approaches for what would come to be called DCI in the 2019–2020 school year. By that school year, a total of 143 districts (591 schools) were using the DCI Framework.

The DCI Framework is designed to address school improvement at the district level with a holistic approach. It engages schools in participating districts in the improvement process. DCI is intended to help districts build both the culture and the structures necessary to effect change at the school level which benefits students and educators.

Capacity building is the foundation of DCI. District leaders expand their skills in analyzing multiple sources of data to guide their selection of focus areas and to regularly assess their progress. A wide range of professional development is available to districts, centered on evidence-based approaches to improving teaching. In addition, participating district and school leaders receive extensive training and assistance to enhance their instructional coaching skills.

The opportunity to network with other districts is an important element of DCI. Leaders from different districts share experiences with their peers about what challenges to expect and what potential solutions can lead to exceptional learning outcomes for Missouri students.

Scope of the Evaluation

Using a mixed-methods approach with both qualitative and quantitative data collection and analysis, R12CC conducted an evaluation of the DCI Framework in Missouri. The evaluation compared the outcomes of schools in districts using the state DCI Framework to those in districts that selected another school improvement option.

R12CC's evaluation of the DCI Framework focused on the following research questions:

1. To what extent are there similarities or differences in the school improvement plans developed by DCI districts and those developed by districts using internally-developed improvement approaches?
2. What are the perceptions of district and school leaders of the DCI Framework and the districts' internally-developed improvement approaches?
3. What aspects of school improvement planning do district and school leaders perceive as most beneficial?
4. To what extent do student demographics and achievement differ between districts using the DCI Framework and those using internally-developed approaches?

Related Research on School Improvement

Missouri and other states are engaged in helping accelerate district and school improvement. Under the Every Student Succeeds Act of 2015 (ESSA), State Education Agencies (SEAs) are given more flexibility in developing strategies to support Local Education Agencies (LEAs) as they work to reduce achievement gaps and improve student outcomes in low performing schools. This led SEAs to develop new frameworks for guiding districts, meeting the requirement of providing support across seven domains (CCSSO, 2019). These include:

- Improving the use of data at the district level and supporting the development of data-based needs assessments.
- Supporting LEAs in their use of funding to promote school improvement.
- Providing technical assistance to LEAs in the process of school improvement.
- Developing programs and structures to improve school leadership.
- Implementing strategies to monitor school improvement.
- Offering guidance and approval for plans associated with the CSI schools.
- Enhancing districts' processes for engaging stakeholders in decision-making.

States built accountability systems that incorporate long-term and interim performance goals with clearly specified measures, a means for weighting outcomes on these measures, and an annually implemented system for differentiating the needs of districts and schools (Congressional Research Service, 2019). As Dunn and Ambroso (2019) noted: "School improvement and turnaround was typically framed as a systemic issue with a large role for LEAs in leading school turnaround and improvement. In fact, most state plans emphasized the role of districts in school improvement over the role of the SEA. This is a notable change from school improvement under No Child Left Behind, in working directly with schools in the improvement process" (p. 2).

This redirection under ESSA led SEAs to develop new plans for school improvement. Dunn and Ambroso (2019) reviewed 23 state-level plans to determine their areas of emphasis. Several priorities emerged across states, including (1) building the capacity of district-level personnel to lead improvement; (2) providing differentiated assistance dependent upon the context and needs of the district; and (3) providing support balanced with reasonable levels of accountability. The Missouri DCI Framework, consistent with the 23 state models reviewed, is designed around these same three priorities.

Many school improvement strategies use plan-do-study-act (PDSA) cycles. Tichnor-Wagner et al. (2017) examined two districts that enacted PDSA cycles. Those surveyed saw value in the PDSA cycle and perceived it as a motivating process. Many participants also reported that the process built on what they were already doing. However, challenges did emerge during implementation. When the PDSA cycle was seen as "just one more thing" added on to their responsibilities, as opposed to an integral part of their work, participants found engaging in the cycles to be time-consuming. Under these circumstances, there was often procrastination during implementation. In response, the researchers proposed integrating the improvement process into ongoing efforts, making it seamless with existing responsibilities. The DCI Framework incorporates these ideas by encouraging educator collaboration in school improvement through professional learning communities at the school level.

Recent studies have examined broader application of school improvement processes at state or regional levels. Gallagher et al. (2019) examined California's continuous improvement planning in the CORE Improvement Community (CIC), a network of eight districts working together on improvement. The report summarizes the first two years of implementation of the program which, similar to DCI, provides districts with data analysis and organizational strategies for leading

improvement. Educators convened as larger groups and established teams in their home districts to guide improvement. The researchers found that district staff were instrumental in advancing change, championing the cause, providing needed resources, and coordinating school improvement efforts districtwide.

At the state level, Jackson et al. (2018) examined the outcomes associated with the intensive technical assistance provided by the State Implementation and Scaling Up of Evidence-Based Practices Center—a project of the National Implementation Research Network (NIRN)—to support Kentucky to build implementation capacity. NIRN's implementation frameworks were also used as part of the development of the DCI Framework. In Kentucky, with a focus on improvement planning for mathematics, workgroups designed training, coaching, and data systems to promote effective mathematics instruction. Preliminary results suggest increases in students meeting math benchmarks are promising with sustained implementation focus.

To summarize, research shows that states and districts are undertaking systematic approaches to supporting school improvement. The DCI Framework is aligned with these approaches. This evaluation serves as an initial review of how DCI districts and Non-DCI districts are proceeding.

Overview of the Report

The remainder of this report is organized as follows. Chapter Two describes the evaluation methodology. Chapters Three through Six present study findings, including the improvement process in action (Chapter Three), perceptions of the school improvement process (Chapter Four), suggestions from principals and superintendents (Chapter Five), and student demographics and achievement (Chapter Six). Chapter Seven presents and discusses recommendations for next steps.

Chapter Two: Methodology

R12CC used a mixed-methods approach for this evaluation. We reviewed multiple sources of data: (1) documents, including samples of school improvement plans from both DCI districts and Non-DCI districts, and the state's review process and guidance/policy documents for school improvement plans; (2) survey responses from principals and superintendents; (3) interview data from principals and superintendents; and (4) student demographics and achievement.

Data Collection and Analysis

Documents

R12CC reviewed documents related to the DCI Framework. These included samples of school improvement plans (from both DCI districts and Non-DCI districts). We used these documents to determine similarities and differences between the state's improvement process and the Non-DCI districts' own processes, and to gain an understanding of the starting point and expectations for the improvement plans. In addition, R12CC examined the state's review process and guidance/policy documents for school improvement plans.

Principal and Superintendent Surveys

R12CC developed and conducted surveys of principals and superintendents to collect perceptual data on school leadership and improvement. The surveys launched on June 18, 2020 and closed on August 7, 2020.

The principal and superintendent surveys asked respondents a series of multiple choice questions centering on issues including school-level and broader-level factors that are the most significant cause of underperformance of schools, and aspects of school improvement planning that are most beneficial. The principal survey also explored the professional learning that schools received, including the topics, providers, and modalities. Both surveys also included open-ended questions to allow for more detailed comments about respondents' school improvement approach.

As Table 1 shows, a total of 226 principals responded to the survey, with 98 from DCI districts and 128 from Non-DCI districts. All nine RPDC regions are represented in the data. A total of 104 superintendents from eight RPDC regions responded to the survey, with 21 from DCI districts, 22 from Non-DCI districts, and 61 that did not specify their district. Table 1 shows the response rates for both surveys.

The survey analyses included cross tabulations to display the findings. To examine the statistical significance of differences across groups, R12CC conducted chi-square tests and t-tests as appropriate. For the written comments, R12CC conducted thematic analyses to identify common themes and key issues across survey respondents.

Table 1. Response Rates for the Principal and Superintendent Surveys

Surveys and Respondents	Population	Number of Responses	DCI Response Rate	Non-DCI Response Rate
Principal Survey				
DCI Principals	591	98	16.6%	
Non-DCI Principals	1,609	128		8.0%
Superintendent Survey				
DCI Superintendents	143	21	14.7%	
Non-DCI Superintendents	416	22		5.3%
Did Not Specify	N/A	61	N/A	N/A

Note. Responses to survey questions were not required, therefore total numbers of respondents may vary throughout this report. A total of 11 Central Office Administrators also responded to the superintendent survey, however their responses are not part of this evaluation.

Interviews

R12CC developed semi-structured interview protocols for principals and superintendents with similar questions to those in the surveys about school improvement processes. In each RPDC region, R12CC identified four principals (i.e., 36 in total) and three superintendents (i.e., 27 in total) for interviews. Due to the COVID-19 pandemic,[3] the final sample included fewer interviewees than originally expected. As Table 2 shows, nine principals and nine superintendents from DCI districts participated in the virtual interviews along with 11 principals and 4 superintendents from Non-DCI districts.

Table 2. Number of Interviewees by Position (N = 33)

	DCI Districts	Non-DCI Districts	Total Interviewees
Principals	9	11	**20**
Superintendents	9	4	**13**
Total Interviewees	**18**	**15**	**33**

For the interview data, R12CC conducted thematic analyses (Braun & Clarke, 2006) to identify common themes and key issues in the responses.

Student Demographics and Achievement

R12CC gathered student demographic and accountability data published by DESE, including both district- and school-level data from the Missouri Assessment Program (MAP). The MAP assessments are administered near the end of the school year and align with Missouri Learning

[3] Missouri, like many states across the nation, transitioned from in-person learning to a remote learning environment in the spring of 2020.

Standards. The MAP reports on student achievement in ELA and mathematics for grades 3–8 and science for grades 5 and 8.

Because of COVID-19 and the resultant federally-approved waiver of the state testing requirement for 2019–2020, data from the 2018–2019 administration of MAP, the last year of completed testing, were used in the analysis. These data also included student demographic characteristics at the school level.

R12CC used descriptive statistics and t-tests to examine the differences in student demographics between DCI and Non-DCI districts. We conducted regressions and Analysis of Covariance tests to explore the relationships between DCI status and student achievement controlling for student demographics.

Some DESE data sets suppress student subgroups (e.g., ELL) when a population is so narrowly defined that it produces a reported number small enough to permit the identification of a single individual. This is determined in accordance with the Missouri Department of Elementary and Secondary Education Data Access and Management Policy (2007). In such cases, the Missouri Student Information System applies statistical procedures to ensure that confidentiality is maintained.

Limitations of the Evaluation

We note some limitations to this evaluation. Due to the pandemic, the resulting sample sizes for the surveys and the interviews were smaller than planned. The smaller sample sizes affected the power of some of the analyses in this evaluation. Additionally, the demands and stress of the pandemic had a pervasive effect on districts and educators. These may have affected educators' views on school improvement as reported here. R12CC requested samples of improvement plans from DESE for this evaluation. Due to the pandemic, the timing of the request by DESE to districts made collection challenging. Therefore, the improvement plans that R12CC reviewed are not fully reflective of the range of plans from across the state.

Notwithstanding these limitations, this evaluation provides DESE with findings that can be used to strengthen assistance to districts and schools.

Chapter Three: The Improvement Process in Action

This chapter examines the extent to which there are similarities or differences in the school improvement plans developed by DCI districts and those developed by districts using internally-developed improvement approaches (Research Question 1). It also examines the perceptions of educators, in both DCI and Non-DCI districts, about the school improvement process (Research Question 2).

DCI and Non-DCI Plans

The Local Education Agency School Improvement Guidance document (Missouri Department of Elementary and Secondary Education, 2019) provides the focus for developing improvement plans. It centers on five pillars of the Continuous Improvement Theory of Action: (1) Leadership; (2) Collaborative Culture and Climate; (3) Effective Teaching and Learning; (4) Data-Based Decision Making; and (5) Alignment of Standards, Curriculum, and Assessment. During the planning process, a diverse group of stakeholders identifies the root causes of the school's problems, sets priorities, develops up to three goals, and describes action steps for implementation.

Within the improvement plans, each goal is written as a SMART goal (i.e., specific, measurable, achievable, relevant, and timely) and provides a rationale and specific strategies for achieving the goal. The plans describe the action steps schools will take over 30, 60, and 90-day periods as well as over the longer term. The plans also identify the assessment strategies used to determine progress. The district superintendent and the State Supervisor for School Improvement approve the plans.

Our review of improvement plans from DCI and Non-DCI districts focused on the processes used to develop the plans, the structure of the plans, types of goals selected, and implementation approach.

There were no notable differences between the plans submitted from DCI and Non-DCI districts. Specifically, we found:

- Plans show signs of districts following the eight-step planning process in MSIP.
- The plans are sufficiently complete in terms of including the required components.
- The alignment of DCI district action plans to CSIP is not readily apparent.
- The goals on some plans do not meet the expectations of SMART goals.
- The goals and measures of progress in some plans are poorly aligned.

Perceptions of the Causes of Underperformance

When comparing the perspectives of principals and superintendents, respectively, on the most significant causes of underperformance at the school level, there were no statistically significant differences based on DCI or Non-DCI status (see Table 3).

Table 3. Educators' Responses to "What school-level factor do you believe is the most significant cause of underperformance in your school?"

School-Level Factors	Principals				Superintendents			
	DCI Districts		Non-DCI Districts		DCI Districts		Non-DCI Districts	
	n	%	n	%	n	%	n	%
Gaps in skills of school leaders	2	3%	4	4%	3	18%	2	14%
Poor or mediocre instructional practice	22	30%	23	24%	7	41%	8	57%
Lack of data literacy awareness	12	16%	17	18%	1	6%	0	0%
Inability to connect with students	5	7%	10	10%	1	6%	2	14%
Missing resources to support school needs	8	11%	17	18%	1	6%	1	7%
Negative school culture or working conditions	4	5%	13	13%	3	18%	1	7%
Other	21	28%	13	13%	1	6%	0	0%
Total	**74**	**100%**	**97**	**100%**	**17**	**100%**	**14**	**100%**

Note. Responses between principals in DCI and Non-DCI districts were not different, X^2 (6, N = 171) = 10.20, p = .12. Responses between DCI and Non-DCI district superintendents were not different, X^2 (6, N = 31) = 3.34, p = .77. "Other" includes a wide range of topics (e.g., time, student engagement, COVID-19, classroom management, teacher characteristics, socio-economic conditions of family and community, communication, curriculum alignment, school autonomy).

At the school level, principals cited poor or mediocre instructional practice, lack of data literacy to guide instruction, and inadequate resources as potential causes of underperformance.

> *The underperformance is a teacher driven factor even though we have some good staff. There is an inability of the teachers to connect with students who are underperforming and it seems impossible for every student to perform up to their ability.*
>
> -Non-DCI Principal

> *We were not using data like we should have been.*
>
> -Non-DCI Principal

> *We have great teachers but they are young and inexperienced. They are so eager to learn and trying very hard. It will take time but they are amazing.*
>
> -DCI Principal

> *Currently, we are in a budget crisis which affects all student learning when we cannot even provide books, supplies, or resources for our students.*
>
> -Non-DCI Principal

Some superintendents reported that expectations for students and instructional practices are the cause of underperformance. They also indicated that staff leadership contributes to the problems of underperformance.

> *The most significant cause is low teacher expectation for students, especially marginalized ones…We need staff and adults who care through love, not overwhelmed because they think students will not succeed because of too many challenges.*
>
> -DCI Superintendent

> *Staff leadership. It is not singular to the principal or assistant principal. We need teacher leaders as well.*
>
> -Non-DCI Superintendent

In considering the broader-level factors that affect underperformance at a school, 44% of the DCI principals cited the economic situations of students and their families as being the most significant (see Table 4). While economic stresses can influence learning, it is nonetheless critical to recognize that school improvement is most effective when it focuses on factors within the building that educators can influence.

Table 4. Educators' Responses to "What broader-level factor do you believe is the most significant cause of underperformance in your school?"

Broader-Level Factors	Principals				Superintendents			
	DCI Districts		Non-DCI Districts		DCI Districts		Non-DCI Districts	
	n	%	n	%	n	%	n	%
Ineffective pre-service preparation programs	5	7%	6	6%	3	18%	0	0%
Weaknesses in standardized assessments	2	3%	15	15%	1	6%	0	0%
Disadvantaged economic situations	31	44%	32	32%	4	24%	5	36%
Hindering societal influences	11	15%	8	8%	2	12%	4	29%
Insufficient parental supports	12	17%	21	21%	2	12%	4	29%
Inadequate hiring or onboarding practices	0	0%	3	3%	0	0%	0	0%
Faulty models for identifying low -performing schools	2	3%	3	3%	0	0%	0	0%
Other	8	11%	11	11%	5	29%	1	7%
Total	**71**	**100%**	**99**	**100%**	**17**	**100%**	**14**	**100%**

Note. Responses between principals in DCI and Non-DCI districts were not different, X^2 (7, N = 170) = 12.37, p = .09. Responses between superintendents in DCI and Non-DCI districts were not different, X^2 (5 N = 31) = 7.90, p = .16.

A challenge is at-home support. Many of our students just do not have that. It is an equity challenge.

-DCI Principal

Because we are a high poverty school, with community and housing segregation, there is a lot of breakdown in the support system they need to come into school and be ready to start learning. We do not have enough staff to get them ready… That is the biggest issue. There is not enough staffing to meet their needs when they walk into the school building.

-DCI Principal

A number of respondents reported that expectations for students can influence student performance.

We are in a high poverty area. Parents want the kids to join in farming and a dairy way of life. As a result, demand to learn curriculum is not a supported priority.

-Non-DCI Superintendent

I think, honestly, it's that education is not as important to people as it used to be. I don't mean to put this off on parents, and it's not all parents. In our community, we are low-income and have a lot of parents who dropped out of school… It's something we fight.

-DCI Principal

Principals' Perceptions of Support

Principals were highly complimentary of the training and assistance they received from DESE and the RPDCs in addressing their school improvement needs.

I can't say enough about the RPDC. There is nothing they put out that is not good. I will [ask] someone in the RPDC and they can provide about anything that I need. The people are amazing.

-Non-DCI Principal

Lots of help from the RPDC to establish a solid curriculum and teaching us by someone sitting us down and assisting us in doing it correctly. Our RPDC was phenomenal to work with. The step-by-step helped our teachers.

-DCI Principal

Professional Learning Topics

As Table 5 shows, principals indicated that there are some differences in what professional development topics schools in DCI and Non-DCI districts receive.

A higher percentage of principals in DCI districts (42% as compared to 28% in Non-DCI districts) reported receiving professional development related to facilitating professional conversations (e.g., through Professional Learning Communities). DCI principals were also more likely to indicate that they receive professional development related to giving effective instructional feedback (52% as compared to 35%), using effective instructional strategies (60% as compared to 47%), and making data-driven decisions (51% as compared to 37%). This cluster of content is consistent with the offerings related to the DCI Framework.

Table 5. Principals' Responses to "On which topics does your school receive professional learning, whether it comes from within or outside your school?"

Professional Development Topics	DCI Districts (n = 98)		Non-DCI Districts (n = 128)	
	n	%	n	%
Facilitating professional conversations (e.g., PLCs)*	41	42%	36	28%
Conducting instructional observations	39	40%	48	38%
Providing instructional feedback*	51	52%	45	35%
Using effective instructional strategies*	59	60%	60	47%
Reaching special student populations (e.g., special education students, English learners)	20	20%	32	25%
Improving literacy	32	33%	42	33%
Making data-driven decisions*	50	51%	47	37%
Social-emotional learning	33	34%	54	42%
Restorative practices or other behavior supports	30	31%	25	20%
Trauma-informed practices	48	49%	62	48%
Other	4	4%	4	3%

Note. * indicates statistically significant differences between principals in DCI and Non-DCI districts at the 95% confidence level based on the Chi-square test. A respondent could have selected multiple professional development topics.

In terms of the number of professional learning offerings, there were no statistically significant differences between the responses of DCI and Non-DCI principals. Both groups reported receiving approximately four types of professional development offerings (Mean=4.15 for DCI principals and Mean=3.55 for Non-DCI principals).

In interviews, most principals noted that the professional development, pre-COVID-19, was wide-ranging and designed to meet the needs of their staff.

> *It was in alignment with our comprehensive goals as a district. All types of configurations of modalities were used, during school and outside of school, at school experiences and online experiences.*
>
> -Non-DCI Principal

Our professional development team works to examine areas of need in curriculum development and adoptions. Teachers attend conferences and return to train and share with the staff when appropriate.

-Non-DCI Principal

Professional Development runs the gamut from data to technology to focus on what you want as a staff…If they ask, we did it ourselves.

-DCI Principal

Professional Development Providers

Principals indicated they receive professional development from a variety of sources, including DESE, RPDC staff, district leaders, school leaders, and other partners (see Table 6). The only statistically significant difference among the survey respondents was in the frequency of professional development provided by DESE staff. Twenty percent of DCI principals stated that DESE provided professional development as compared to 11% of the Non-DCI principals.

Table 6. Principals' Responses to "Who provides the professional learning for the topics identified above?"

Professional Learning Providers	DCI Districts (n = 98)		Non-DCI Districts (n = 128)	
	n	%	n	%
Missouri Department of Elementary and Secondary Education (DESE) staff*	20	20%	14	11%
Regional Professional Development Center (RPDC) staff	56	57%	63	49%
District leaders	54	55%	64	50%
School leaders	57	58%	72	56%
Outside partners (e.g., national consultants, professional associations, non-profit organizations)	42	43%	54	42%
Other	6	6%	7	5%

Note. * indicates statistically significant differences between principals in DCI and Non-DCI districts at the 95% confidence level based on the Chi-square test. A respondent could have selected multiple professional learning providers.

Professional Learning Modalities

Principals indicated how professional development is delivered in their schools. DCI and Non-DCI principals reported a similar breakdown of modalities, with most professional development offered in the form of staff-wide sessions during regular school hours and direct support to individual teachers (see Table 7).

Table 7. Principals' Responses to "By what modalities does your school receive professional learning? (Please include online and in-person supports.)"

Professional Learning Modalities	DCI Districts (n = 98)		Non-DCI Districts (n = 128)	
	n	%	n	%
Staff-wide support sessions with teachers within regular school hours	61	62%	82	64%
Staff-wide support sessions with teachers outside of regular school hours	30	31%	46	36%
Teacher team supports	48	49%	54	42%
Direct support to individual teachers	50	51%	64	50%
Direct support to the principal	38	39%	43	34%
Direct support to other administrators and school leaders*	26	27%	19	15%
Other	1	1%	1	1%

Note. * indicates statistically significant differences between principals in DCI and Non-DCI districts at the 95% confidence level based on the Chi-square test. A respondent could have selected multiple professional learning modalities.

Summary

A review of school improvement plans from DCI and Non-DCI districts showed no notable differences in terms of the processes used to develop the plans, the structure of the plans, types of goals selected, and implementation approach.

Principals and superintendents from both the DCI and Non-DCI districts perceived the causes of underperformance at the school level similarly. Principals and superintendents indicated that the causes of underperformance were connected to instructional practices, expectations for students, data literacy, resources, and staff leadership.

Compared with principals in Non-DCI districts, a higher percentage of principals in DCI districts indicated that they received professional development that focused on facilitating professional conversations, giving effective instructional feedback, using effective instructional strategies, and making data-driven decisions.

DCI and Non-DCI principals indicated they received professional development from a variety of sources, including DESE, RPDC staff, district leaders, school leaders, and other partners. They also indicated that the professional development takes a number of different forms.

Chapter Four: Perceptions of the School Improvement Process

This chapter examines the perceptions of principals and superintendents of the school improvement process.

Most Beneficial Aspect of School Improvement

When asked about the aspect of the school improvement planning process that is most beneficial (Research Question 3), there were no statistically significant differences in the responses of principals and superintendents based on DCI or Non-DCI status (see Table 8).

Table 8. Educators' Responses to "What aspect of the school improvement planning process is most beneficial for your school?"

Most Beneficial School Improvement Planning Process	Principals				Superintendents			
	DCI Districts		Non-DCI Districts		DCI Districts		Non-DCI Districts	
	n	%	n	%	n	%	n	%
Engaging stakeholders collaboratively	12	16%	13	13%	4	24%	1	8%
Analyzing data on learning and teaching	19	25%	25	25%	4	24%	6	46%
Developing goals for improvement	6	8%	11	11%	1	6%	0	0%
Receiving district or state feedback about the quality of the plan	0	0%	0	0%	0	0%	0	0%
Identifying strategies and action steps to implement	25	33%	29	29%	2	12%	4	31%
Monitoring ongoing formative progress during the school year	13	17%	21	21%	4	24%	1	8%
Other	1	1%	2	2%	2	12%	1	8%
Total	**76**	**100%**	**101**	**100%**	**17**	**100%**	**13**	**100%**

Note. A chi-square test showed that responses between principals in DCI and Non-DCI districts are not different, X^2 (5, N = 177) = 1.34, p = .93.

Respondents indicated that analyzing data on learning and teaching is a key element of the school improvement process. It leads to more strategic decisions about areas of focus based on evidence.

> *Analyzing data. That gives us the "why" to what we are doing. It's not just any idea we want. The data really helps to guide us.*
>
> -Non-DCI Principal

> *We've taken an approach in the last year of revising our comprehensive improvement plan, trying to hone in on what our specific goals are and what we'll do to achieve those. We had been using a shotgun approach. We took a step back and said, "let's focus on this, this, and this." Those are the big rocks. We've been a bit more strategic on that.*
>
> -DCI Superintendent

School and district leaders value the role of engagement and collaboration when assessing needs and identifying strategic action steps for improvement. The importance of collaboration was a recurring theme across all groups in the surveys and interviews.

> *The school improvement process begins with a district strategic plan where everyone is on the same page and the focus is on instructional improvement…with participants from the Board of Education, students, parents, community, administrators, teachers, and other school staff. We identified strengths and weakness and assessed needs.*
>
> -DCI Superintendent

> *Well informed data analysis helps us address the specific needs of the students. Parental input is very beneficial for their involvement in their children's education and it helps the school to know their concerns and needs. We partner to support achievement.*
>
> -Non-DCI Superintendent

Most Effective Factor in Advancing School Improvement

Many superintendents believe school-based leadership is the most pivotal ingredient for improvement. Strong school leaders guide the development and implementation of improvement plans and ensure the engagement of staff in that plan. Superintendents and principals recognize teachers play a key role in the school improvement process.

> *To me, having effective leaders is the most important, having instructionally minded administrators, whether it's your principal or curriculum person, because they're the individuals that are going to be able to work with teachers to improve instruction.*
>
> -DCI Superintendent

> *I really think about teacher efficacy and the idea that they are the silver bullet to help our kids… Definitely the teachers.*
>
> -DCI Principal

> *Hands down, teachers are most important.*
>
> -DCI Superintendent

Superintendents noted the importance of having clear goals and expectations that respond to the needs identified at the schools. They underscored that it is essential to use data to monitor progress of students as well as the school's overall trajectory toward meeting goals.

> *Clear expectations, focused plans and action steps, systems for monitoring progress and improvement, time and priority management skills.*
>
> -DCI Superintendent

Funding for professional development and other resources was reported as a key element for success as it helps enable districts and schools to persist in the improvement process. A majority of superintendents noted the importance of staying committed to continuous improvement, building a plan for change, and maintaining the process throughout the year and into each subsequent year. The process itself, over several cycles of improvement, becomes part of the culture and operations of the school.

> *We trained teachers in data process and how to [set] goals for those students' classes. They sit as a team and talk about math and go further thinking about what math might look like in the next grade. We work to develop a culture where we can be vulnerable with each other and be safe. Culture is the backbone of what we do.*
>
> -Non-DCI Superintendent

> *I think identifying resources and making them available to our students, family, and school district…I think being able to deliver those is key to have good quality communication with families, relationships and trust…All these factors need to work together for a great school system.*
>
> -DCI Superintendent

Superintendents' Views on School Improvement

Two questions in the interviews directed only to superintendents addressed their perceptions of (1) the support they provide to their underperforming schools; and (2) the key factors that lead to their selection of a school improvement approach.

Supports for Underperforming Schools

Both DCI and Non-DCI superintendents indicated that they provide similar types of support to underperforming schools. Both groups of superintendents engage in:

- Providing instructional and leadership coaching.
- Supplementing instruction with additional support personnel such as counselors and social workers.
- Pairing new teachers with mentors for support.
- Reducing class size where possible.
- Developing expanded student resources using Title I funding.
- Expanding outreach to engage families more in the education of their students.
- Offering more professional development and digital content support.

Factors Associated with Selection of the School Improvement Approach

Superintendents indicated which factors lead to the selection of either the DCI or Non-DCI approach. All Non-DCI superintendents stated they are satisfied with their current model and do not see a reason to change to the DCI approach. They noted that the same benchmarks would apply whether or not the DCI process was enacted.

> *We assess more often after direct instruction, tier the students, and progress monitor weekly and monthly. The state uses the high stakes tests overall maybe three times a year. We prefer the more individualized model.*
>
> -Non-DCI Superintendent

Non-DCI superintendents also value having an internally-developed structure for school improvement that can be maintained over several years. Some Non-DCI superintendents said that they are unfamiliar with the state process.

> *We have been able to build on what we have and what is working. We are trying not to rebuild the mountain every year. That is tough in education because everyone wants a new and shiny object. I think it is working well. We continue to tweak.*
>
> -Non-DCI Superintendent

DCI superintendents believe the structure and systematic nature of the state approach is beneficial. They are particularly appreciative of the assistance offered by DESE and the RPDC staff.

> *If I can't be successful with the help they've [DESE] given me, I probably shouldn't be superintendent.*
>
> -DCI Superintendent

> *We did not have a systematic focus. We have great people and they are working hard but not working toward the same goals. A [colleague] remarked that we had pockets of excellence so I felt it was the right time to identify needs especially at the high school level in Math and Special Education. We chose the DCI process.*
>
> -DCI Superintendent

> *One of the options was being a part of the DCI [to] work with the RPDC. That blended really nicely with what we were going to do anyway. We were professional learning communities schools and were trying to reimagine how we were going to work collaboratively…Free professional development, free guidance. Very helpful.*
>
> -DCI Superintendent

Summary

Principals and superintendents in DCI and Non-DCI districts believe that focusing on data analysis, taking strategic action steps, and developing a school culture that encourages change, reflection, and collaboration are cornerstones of an impactful school improvement process. Superintendents believe school leadership is a key to successful school improvement and both principals and superintendents noted that building the capacity of teachers is pivotal.

Both DCI and Non-DCI superintendents provide similar types of assistance to their schools. Superintendents' selection of a school improvement approach, DCI or Non-DCI, is related to their familiarity with the DCI Framework or general satisfaction with internally-developed approaches to improvement.

DCI superintendents believe the structure and systematic nature of the state approach is beneficial. They are particularly appreciative of the assistance offered by DESE and RPDC staff.

Chapter Five: Suggestions from Principals and Superintendents

This chapter includes suggestions from school and district leaders for strengthening the implementation of the DCI Framework and districts' internally-developed improvement approaches.

Professional Development: Topics and Delivery

Principals and superintendents identified specific topics for professional development or assistance from DESE that would be helpful to their districts. They are particularly interested in receiving professional development that focuses on practical applications of concepts. These include:

- Providing targeted professional development related to instruction.
- Offering assistance in setting specific goals.
- Providing additional training on the use of the principal evaluation tool.
- Increasing opportunities for principals to network across districts.
- Improving communication about the Missouri Leadership Development System.
- Developing uniform, standards-based benchmark assessments.

Principals and superintendents expressed an interest in receiving professional development that is differentiated according to the size of the district, the previous knowledge base of the school staff, and the grade level of participants. For example, one superintendent stated:

> *The kicker that's a struggle for a district our size, and maybe a bit bigger, is that not every district has the personnel to provide the services that the RPDC is able to provide to us. I'm appreciative of that. When you get into larger districts, they have curriculum writers, instructional coaches, personnel members who provide these services. Targeting districts who don't have those services could be more beneficial.*
>
> -DCI Superintendent

Superintendents have concerns related to the consistency in the quality of professional development that districts receive. They believe the assistance is most impactful when the state assigns the same individual professional developers to districts, and when it ensures presenters and trainers have the relevant experience for the target audience. Principals and superintendents feel that on-site visitations from RPDC trainers would be more helpful if they were to conduct more on-site observations and provide related feedback on performance.

> *Work with individual schools on campus [several times] to review data, observe the environment, observe staff, and then sit down to discuss strategies.*
>
> -Non-DCI Superintendent

Some superintendents expressed concern about professional development that requires principals and teachers to be out of school. They call for asynchronous, online, or summer trainings that do not require the use of substitutes for class coverage.

Although beyond the focus of this evaluation, a recurring theme among superintendents is a desire to partner with DESE to improve the teacher pipeline. Superintendents believe that increasing the number and quality of teaching candidates is critical for school improvement—especially when viewed through a long-term lens. In part, this effort would expand the pool of candidates for new teaching positions both in their home districts and across the state.

Summary

Principals and superintendents identified specific topics for professional development or assistance from DESE. They are particularly interested in receiving professional development that focuses on practical applications of concepts and is differentiated according to the size of the district, the previous knowledge base of the school staff, and the grade level of participants.

Some superintendents have concerns related to the consistency in the quality of professional development, or about professional development that requires principals and teachers to be out of school.

Chapter Six: Student Demographics and Achievement

This chapter examines the extent to which student demographics and achievement differ between districts using the DCI Framework and those using internally-developed approaches (Research Question 4).

Student Demographics

R12CC used descriptive analyses and t-tests to compare the student demographics of DCI and Non-DCI districts. Table 9 shows there were no statistically significant differences in terms of student demographics. This finding means that student demographics are not a differentiating factor in a district's decision to participate in DCI. This finding also aligns with a key goal of DCI: to create an improvement system that can work in any district regardless of demographics.

Table 9. Student Demographics, DCI and Non-DCI Districts, 2019

Demographic	DCI Districts	Non-DCI Districts	*P*-value[4]
English Language Learner	4.0%	5.1%	0.282
Special Education	14.0%	13.3%	0.251
Economically Disadvantaged	46.8%	41.7%	0.095
African American	15.8%	15.5%	0.179
Asian	1.1%	2.4%	0.133
Hispanic	6.6%	6.7%	0.195
White	72.0%	70.2%	0.348
Other	4.5%	5.2%	0.209
Number of Districts	141	417	
Number of Students	237,589	643,429	

Source. Missouri Comprehensive Data System, Missouri Department of Elementary and Secondary Education.
Note. Economically disadvantaged represents students who received free or reduced price meals.

Similarly, Table 10 focuses on the student demographics of CSI schools in DCI districts and CSI schools in Non-DCI districts. Both groups have high percentages of economically disadvantaged students (71.5% and 82.2%, respectively), and African American students (79.8% and 72.2%, respectively).

[4] A *p*-value is a measure of the probability that an observed difference could have occurred due to chance alone. In this report, R12CC uses the *p*-value of .05 as it is the conventional cut-off point for significance testing.

Table 10. Student Demographics, CSI Schools, 2019

Demographic	CSI Schools in DCI Districts	CSI Schools in Non-DCI Districts	*P*-value
English Language Learner*	2.0%	10.3%	0.017
Special Education	15.6%	15.7%	0.369
Economically Disadvantaged	71.5%	82.2%	0.496
African American	79.8%	72.2%	0.095
Asian*	0.2%	1.2%	0.036
Hispanic	2.5%	7.5%	0.087
White*	15.5%	16.3%	0.048
Other	2.0%	2.9%	0.462
Number of Districts	16	48	
Number of Students	6,238	17,835	

Source. Missouri Comprehensive Data System, Missouri Department of Elementary and Secondary Education.
Note. *indicates statistically significant differences between CSI schools in DCI districts and CSI schools in Non-DCI districts at the 95% confidence level.

Student Proficiency Rates

Using data from MAP assessments on student achievement in ELA and mathematics for grades 3–8 and science for grades 5 and 8, R12CC compared the proficiency rates between the DCI and Non-DCI districts (see Table 11). A lower percentage of students (37.8%) in DCI districts were proficient in science, compared to students in Non-DCI districts (40.0%). Differences in proficiency rates for ELA and mathematics were not statistically significant between the two groups.

Table 11. Percent of Students Who Achieved Proficiency and Above, DCI and Non-DCI Districts, 2019

Subjects	DCI Districts	Non-DCI Districts	*P*-value
English Language Arts	45.1%	46.8%	0.065
Mathematics	38.0%	39.7%	0.088
Science*	37.8%	40.0%	0.042
Number of Districts	141	417	
Number of Students	237,589	643,429	

Source. Missouri Comprehensive Data System, Missouri Department of Elementary and Secondary Education.
Note. *indicates statistically significant differences between DCI districts and Non-DCI districts at the 95% confidence level.

Table 12 compares the proficiency rates between CSI schools in DCI districts and CSI schools in Non-DCI districts. CSI schools in DCI districts had a statistically significantly higher percentage of students who are proficient in ELA (29.6%) than CSI schools in Non-DCI districts (19.4%). The differences in mathematics and science were not statistically significant.

Table 12. Percent of Students Who Achieved Proficiency and Above, CSI Schools, 2019

Subjects	CSI Schools in DCI Districts	CSI Schools in Non-DCI Districts	*P*-value
English Language Arts*	29.6%	19.4%	0.010
Mathematics	15.2%	11.2%	0.086
Science	16.9%	12.3%	0.107
Number of Districts	16	48	
Number of Students	6,238	17,835	

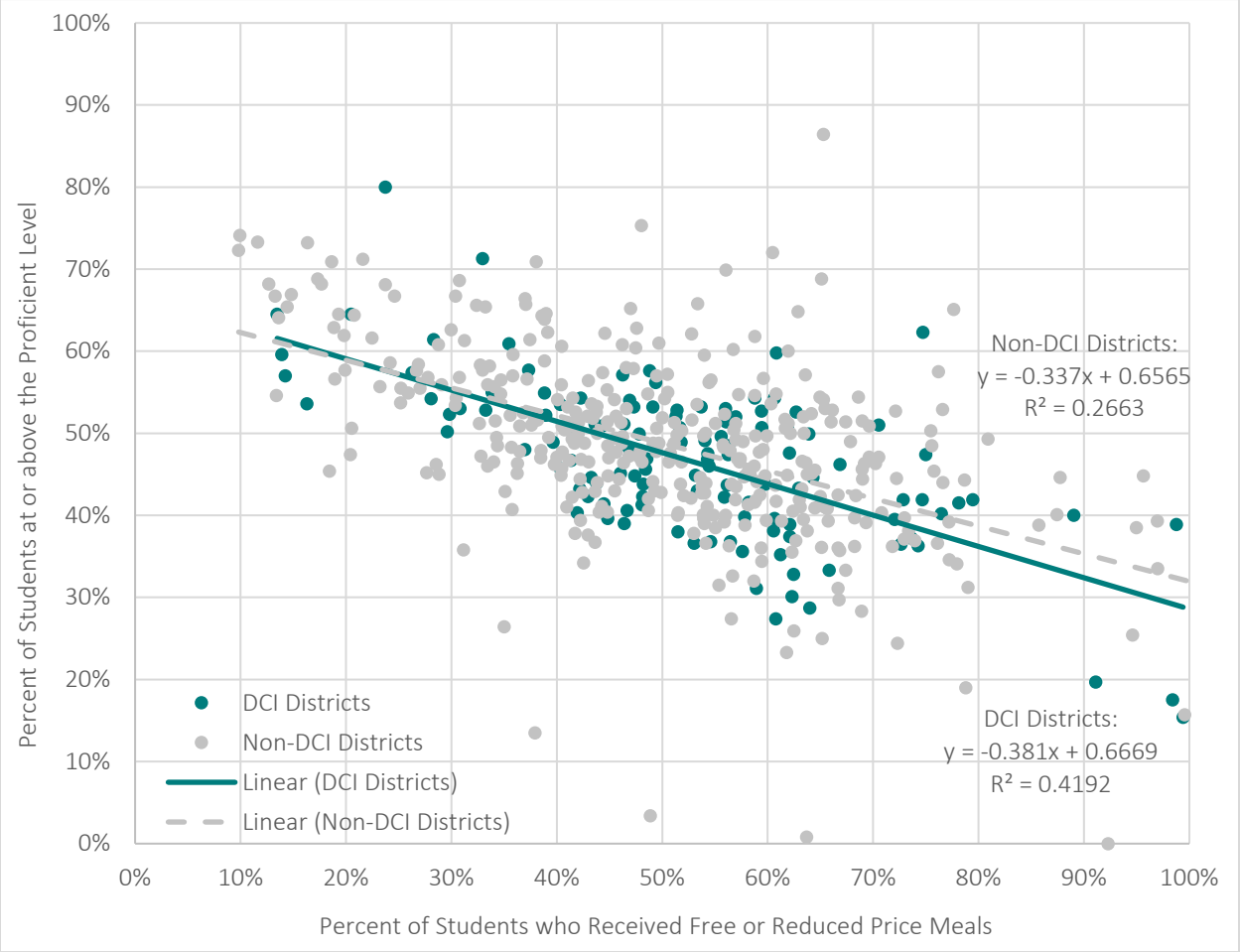
Source. Missouri Comprehensive Data System, Missouri Department of Elementary and Secondary Education.
Note. * indicates statistically significant differences between CSI schools in DCI districts and CSI schools in Non-DCI districts at the 95% confidence level.

Exploratory Analysis: Demographics and Proficiency Rates

R12CC conducted additional exploratory analyses to help understand if proficiency rates in DCI and Non-DCI districts were associated with different demographic characteristics. Figure 1 displays the linear regression between the percentage of students who received free or reduced price meals in the district and student proficiency rates in ELA. The percentage of students who received free or reduced price meals moderately predicted student proficiency rates in ELA in both DCI and Non-DCI districts, with R-squared being 0.43 and 0.26 respectively.[5] The downward regression lines indicate districts with higher percentages of students who received free or reduced price meals are associated with lower rates of proficiency. In practical terms, the DCI and Non-DCI districts are performing similarly.

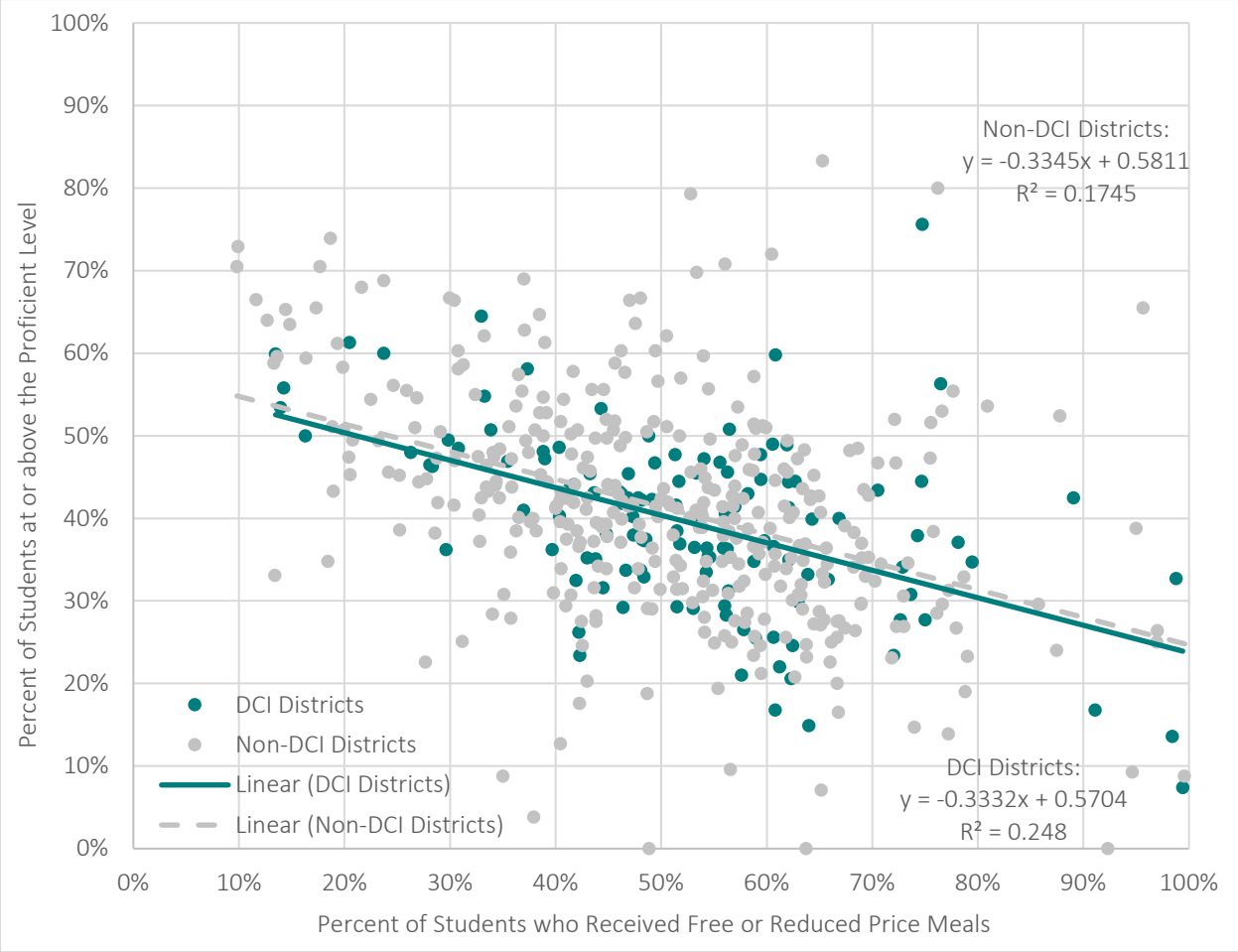
[5] R-squared measures the proportion of the variance for a dependent variable that is explained by the independent variable(s). It describes how close the observed data (i.e., the scattered dots) are to the fitted regression line.

Figure 1. Relationship between ELA Proficiency and Percent of Students Who Received Free or Reduced Price Meals, DCI and Non-DCI Districts, 2019



Another linear regression analysis assessed the relationship between the proficiency in mathematics and the percentage of students who received free or reduced price meals (see Figure 2). The relationship for mathematics resembles that for ELA. As the percentage of students who received free or reduced price meals increases, the proficiency rate in mathematics decreases. In this case, the patterns for DCI and Non-DCI districts are similar.

Figure 2. Relationship between Mathematics Proficiency and Percent of Students Who Received Free or Reduced Price Meals, DCI and Non-DCI Districts, 2019



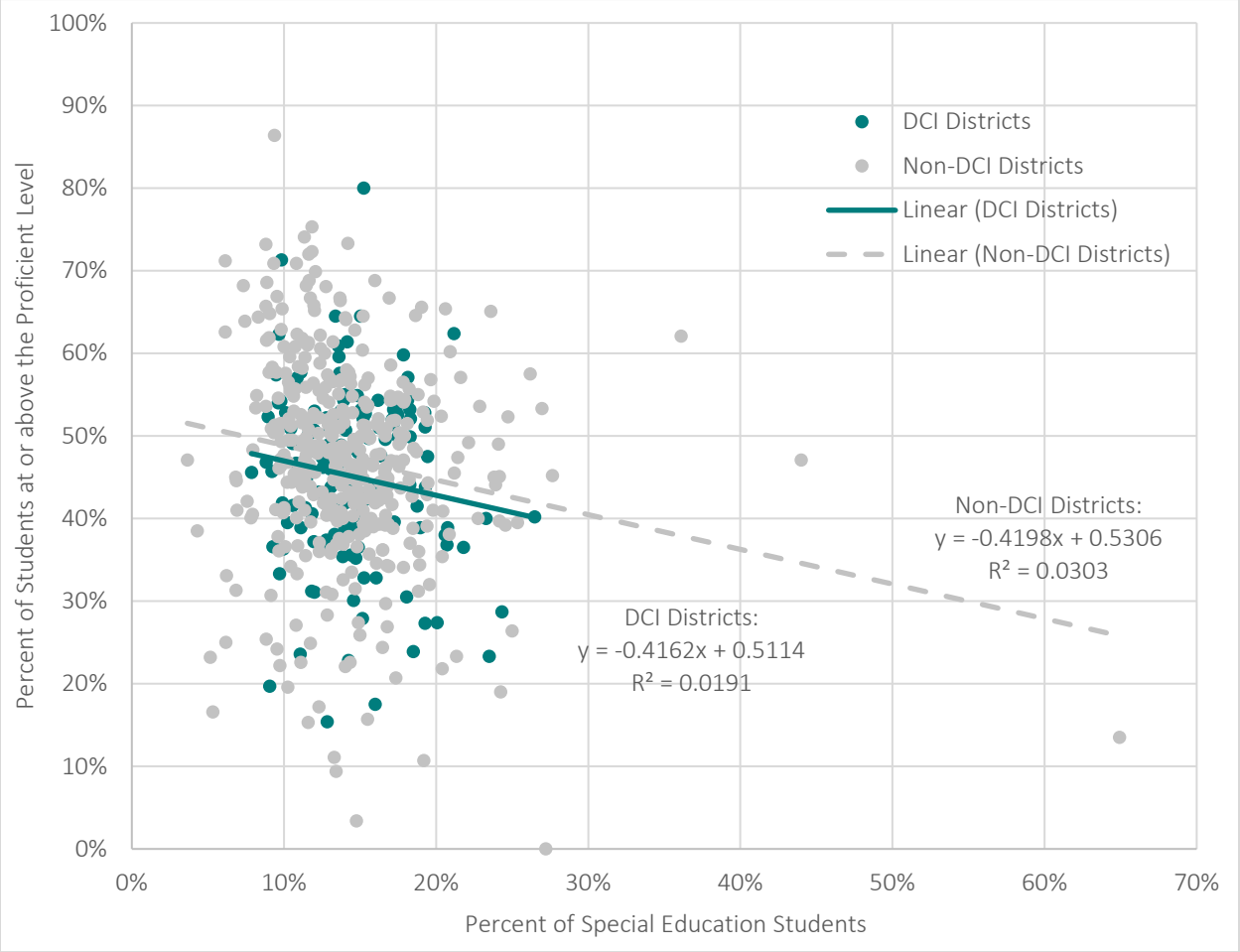
We examined the relationship between students who received free or reduced price meals and performance on the science assessment (see Figure 3). The level of proficiency is lower when there are higher percentages of economically disadvantaged students. The DCI districts, in comparison to the Non-DCI districts, show slightly higher proficiency rates when the percentages of students who received free or reduced price meals are low. However, as the percentage of students who received free or reduced price meals increases, their proficiency rates decrease.

Figure 3. Relationship between Science Proficiency and Percent of Students Who Received Free or Reduced Price Meals, DCI and Non-DCI Districts, 2019

In a second series of linear regression analyses, R12CC explored the relationship between student performance and percentages of Special Education students. In general, there is not a strong relationship between the percentage of students in Special Education and student proficiency rates as the predictive power of the linear regression model is low, with R-squared ranging from 0.02 to 0.03.

Figure 4 displays the plot for the proficiency rates on ELA relative to the percentage of Special Education students. Barring a few outliers in Non-DCI districts, the relationships are similar between DCI and Non-DCI districts.

Figure 4. Relationship between ELA Proficiency and Percent of Special Education Students, DCI and Non-DCI Districts, 2019



Parallel analyses examined the relationship between special education percentages and proficiency in mathematics and science. The graphs are virtually identical to Figure 4, indicating the same relationship for all three subjects.

Analysis of Covariance: Assessing the Impact of DCI, Controlling for Demographic Variables

One final set of analyses explored whether student proficiency is different between DCI and Non-DCI districts, controlling for key demographic variables. As we have already seen, demographic variables can be predictive of proficiency rates, with lower rates of proficiency associated with higher percentages of students who received free or reduced price meals and higher percentages of Special Education students. The earlier analyses examined these variables individually to assess their relationship to proficiency. More precisely, several demographic variables may work together to impact student outcomes and demographic categories can overlap. For example, some students who receive free or reduced price meals are also Special Education students and some are English Language Learners. Any one student may be included in one category only, two categories, or all three categories. And the percentages in each demographic category vary from district to district.

R12CC conducted an Analysis of Covariance (ANCOVA), a statistical method that allows us to control for demographic differences and determine if there are any remaining differences between DCI or Non-DCI districts.

The ANCOVA controls for three demographic variables: the percentage of students who received free or reduced price meals; the percentage of Special Education students; and the percentage of minority students (defined as Non-White students). The designation as a DCI district or Non-DCI district is a predictor variable. A first run of this analysis included the percentage of English Language Learners (ELL) in the group of demographics variables. The ELL variable is frequently suppressed in the Missouri Comprehensive Data System to avoid potential identification of students. In this case, the ELL percentages reported for 81 of 141 DCI districts and 287 of 417 Non-DCI districts are suppressed. These missing data reduce the sample size and power of the analysis. Therefore, R12CC conducted the final analysis using three demographic variables with the larger number of districts in the calculation.

The results of the ANCOVA for ELA and mathematics were similar. The only statistically significant findings were related to the three demographic variables, indicating that student proficiency rates decreased as the percentages of students in each category increased (see the Appendix).

The results for the science ANCOVA were slightly different. The percentage of students who received free or reduced price meals and the percentage of Special Education students were predictors of student proficiency (see the Appendix).

Summary

There were no statistically significant differences in terms of student demographics between DCI and Non-DCI districts. CSI schools in DCI districts and CSI schools in Non-DCI districts both have high percentages of economically disadvantaged students and African American students.

At the district level, the differences in proficiency rates of students for ELA and mathematics were not statistically significant between DCI and Non-DCI districts. A statistically significant lower percentage of students in DCI districts were proficient in science, compared to students in Non-DCI districts.

At the school level, the differences in proficiency rates of students for mathematics and science were not statistically significant between CSI schools in DCI districts and CSI schools in Non-DCI districts. CSI schools in DCI districts have a statistically significant higher percentage of students who are proficient in ELA than CSI schools in Non-DCI districts.

After controlling for student demographics (i.e., the percentage of students who received free or reduced price meals; the percentage of Special Education students; and the percentage of minority students), the DCI and Non-DCI districts were performing similarly in ELA, mathematics, and science.

Chapter Seven: Recommendations and Next Steps

The DCI Framework is a key vehicle through which DESE provides school improvement assistance to a growing number of participating districts across the state. DCI districts found the professional development, improvement-related materials, and overall engagement with DESE and RPDC staff to be helpful. The following issues and recommendations serve as the basis for refining the state's DCI Framework to build district and school capacity.

Areas for Improvement

Issue One: Implementation Action Plans

Overview

The DCI implementation action plans drive school improvement and serve as a linchpin for strengthening district and school practice. Having these action plans readily available, quality reviewed, and results folded back into the improvement process strengthens the DCI Framework.

Recommended Action

Develop a quality rating rubric for DCI implementation action plans. A quality rating rubric would serve two purposes. It would provide the state with a vehicle for comparing the quality and consistency of district plans. The rubric would also establish quality standards that districts could apply when developing their plans, thereby increasing alignment with districts' CSIP and professional development strategies.

Build a repository of DCI implementation action plans. DESE could systematically collect implementation plans from all DCI participating districts on an annual basis. Then, using the DCI implementation action plan quality rating rubric, DESE could review a stratified sampling of the plans. By so doing, DESE would be better equipped to identify which elements of the DCI Framework are taking hold in the districts and which elements need further refinement.

Provide a resource library of annotated DCI implementation action plans. DESE and the RPDCs could collaborate to develop an electronic library of DCI implementation plans that are annotated based on the quality rating rubric. These plans could be actual, but be presented anonymously. Such an annotated library would provide district and school leaders with examples of plans of varying quality rather than exemplars to emulate. Examining strengths and weaknesses of the plans with the rubric could help districts and schools identify next steps needed to support the development of high-quality and increasingly more rigorous implementation plans.

Issue Two: DCI Collaborative

Overview

Through surveys and interviews, frontline educators provided suggestions for future DCI support to districts. Incorporating their ideas more formally into the planning of professional development services can strengthen the ability of DESE to match supports to the needs of participants.

Recommended Action

Develop a DCI Collaborative. The DCI Collaborative could include two educators (a principal and a superintendent) from each of the nine RPDC regions. The Collaborative would focus on helping

DESE determine the levels of satisfaction with the DCI professional development and coaching, highlight the factors that are enhancing or impeding district progress, and identify emerging professional development needs and gaps. Input and feedback from the Collaborative would complement the existing data gathering efforts to determine the district-wide and building-level professional development needs.

Issue Three: Impact of DCI Framework on Student Learning

Overview

With the expected resumption of state testing in Missouri in spring 2021, DESE needs to prepare to use those data to ascertain and compare the progress in student learning of the DCI and Non-DCI districts.

Recommended Action

Establish a multi-year plan for collecting and analyzing student achievement data from both DCI and Non-DCI districts. Analyzing these data will provide a measure of the impact of participation in DCI, compared to Non-DCI districts, on improving student growth and addressing the achievement gaps.

This report's student achievement analysis can serve as a benchmark for future analyses. Analyzing the student learning outcomes from DCI districts over time will provide DESE with evidence of the effectiveness of the DCI Framework in improving access to high-quality education for all students. Further, the analyses can be disaggregated based on the number of years a district has been engaged in the system to inform DESE's understanding of the compounding effect of the DCI Framework.

Issue Four: Communications

Overview

Superintendents' selection of a school improvement approach, DCI or Non-DCI, is related to their familiarity with the DCI Framework. Effective two-way communications can both broaden district understanding of available state resources and contribute to the state's ability to respond to emerging needs.

Recommended Action

Launch information outreach efforts to broaden districts' awareness of the full range of DESE supports. The state should provide consistent and comprehensive communications to increase the awareness of districts of the DCI Framework and related resources. By raising this awareness, DESE will be better able to reach and engage more districts, both DCI and Non-DCI alike, and expand the impact of the DCI Framework. Moreover, two-way information outreach efforts will provide DESE with an additional means for identifying emerging and escalating needs of frontline practitioners at the district and school levels.

Summary

DESE is directly supporting district and school improvement efforts through the DCI Framework. By focusing rigorously on capacity building, the state is positioned to enhance the learning of all students.

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Appendix

A series of ANCOVAs were conducted on the relationship between student achievement (ELA, mathematics, and science) and three covariates (percentage of students who received free or reduced price meals, percentage of Special Education students, and percentage of minority students) and the predictor variable of whether a district is a DCI district or a Non-DCI district.

The first ANCOVA estimates the effect of these variables on the proficiency rate in ELA. As Table 13 shows, student demographics are predictive of proficiency rates, with the level of proficiency decreasing as each of these percentages of student demographics increases. After controlling for student demographics, the DCI and Non-DCI districts are performing similarly.

Table 13. ANCOVA Estimates, ELA Proficiency and Above, DCI and Non-DCI Districts, 2019

Source	Partial Sum of Squares	Degree of Freedom	Mean Square	F test	*P*-value
Model	1.755	4	0.439	60.09	0.000
DCI Indicator	0.020	1	0.020	2.70	0.101
Percent of Free or Reduced Price Meals	0.976	1	0.976	133.69	0.000
Percent of Special Education	0.075	1	0.075	10.27	0.001
Percent of Minority	0.149	1	0.149	20.46	0.000
Residual	3.482	477	0.007		
Total	5.237	481	0.011		

The second ANCOVA focuses on mathematics proficiency (see Table 14). Student demographics are statistically significant predictors of proficiency rates. After controlling for student demographics, the difference between DCI and Non-DCI districts is not statistically significant.

Table 14. ANCOVA Estimates, Mathematics Proficiency and Above, DCI and Non-DCI Districts, 2019

Source	Partial Sum of Squares	Degree of Freedom	Mean Square	F test	*P*-value
Model	1.592	4	0.398	29.78	0.000
DCI Indicator	0.012	1	0.012	0.89	0.346
Percent of Free or Reduced Price Meals	0.912	1	0.912	68.25	0.000
Percent of Special Education	0.059	1	0.059	4.44	0.036
Percent of Minority	0.130	1	0.130	9.72	0.002
Residual	6.375	477	0.013		
Total	7.967	481	0.017		

The third ANCOVA uses the same set of predictors for the science proficiency outcome (see Table 15). The percentage of students who received free or reduced price meals and the percentage of Special Education students are both statistically significant predictors of proficiency in science. The percentage of minority students and whether the district is a DCI district do not contribute significantly to the proficiency rate.

Table 15. ANCOVA Estimates, Science Proficiency and Above, DCI and Non-DCI Districts, 2019

Source	Partial Sum of Squares	Degree of Freedom	Mean Square	F test	*P*-value
Model	1.717	4	0.429	35.11	0.000
DCI Indicator	0.045	1	0.045	3.67	0.056
Percent of Free or Reduced Price Meals	1.101	1	1.101	90.04	0.000
Percent of Special Education	0.056	1	0.056	4.61	0.032
Percent of Minority	0.042	1	0.042	3.45	0.064
Residual	5.795	474	0.012		
Total	7.512	478	0.016		