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LITERACY DESIGN COLLABORATIVE 2017–2018 EVALUATION REPORT

Jia Wang, Joan L. Herman, Scott Epstein, Seth Leon, Deborah La Torre, Sandy Chang, Velette Bozeman, and Julie Haubner

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Jia Wang, Joan L. Herman, Scott Epstein, Seth Leon, Deborah La Torre, Sandy Chang, Velette Bozeman, and Julie Haubner

CRESST/University of California, Los Angeles

Executive Summary

The Literacy Design Collaborative (LDC) was created to support teachers in implementing Common Core State Standards (CCSS) and embedding literacy skill development throughout content area curriculum. The LDC Investing in Innovation (i3) project focuses on developing teacher competencies through job-embedded professional development and the use of professional learning communities (PLCs). Teachers work collaboratively with coaches to develop their expertise further and design standards-driven, literacy-rich writing assignments within their existing curricula across all content areas.

Engaged in the evaluation of LDC tools since June 2011, UCLA's National Center for Research on Evaluation, Standards, and Student Testing (CRESST) is the independent evaluator for LDC's federally funded i3 validation grant. CRESST's evaluation is using multiple data sources and a quasi-experimental design (QED) to examine LDC implementation and impact in two cohorts of schools in a large, urban West Coast school district. Study schools serve largely Hispanic populations, with a high proportion of students qualifying for free and reduced lunch, and many English language learners.

This annual report reflects the second year of implementation in 14 Cohort 1 schools, which began implementation during 2016–2017, and the first year of implementation for 31 Cohort 2 schools, which commenced at the beginning of the 2017–2018 school year. The program experienced a high level of attrition among Cohort 1 participants and less than a quarter of the total 2017–2018 participants are teachers and administrators from Cohort 1. With so many new participants and program effects on student learning expected only after two years of implementation, this annual report should be considered an interim look at LDC progress. It is also noteworthy that nearly two thirds of all 2017–2018 participating teachers taught at the elementary school level, as that development represents an expansion of LDC's original focus on middle schools.

The CRESST evaluation addresses research questions in three major areas:

- Program Characteristics and Implementation
- Contextual Factors and Implementation

- Program Impacts

The following findings draw on multiple methods. These include surveys of teachers, teacher leaders, and administrators; the analysis of LDC modules, which are a central manifestation of LDC practice; participant interactions with LDC CoreTools, the electronic platform through which teachers access LDC professional development resources (online courses, existing LDC modules, module templates, and support for module development); LDC administrative records; and administrative data on students and teachers including class rosters, student demographics, and student performance on state standards-based assessments. We begin with overall findings and then move to summarize perspectives on key LDC components, intermediate effects on teachers' instructional strategies and practice, and effects on student outcomes. Detailed evidence with regard to key LDC activities, supports, and pedagogical impacts help to explain these positive findings and offer implications for further strengthening LDC.

Overall Findings

Findings from both participant surveys and analyses of student outcomes reveal positive results for the LDC intervention:

- Teacher, teacher leader, and administrator participants reported positive attitudes toward LDC. All measures of satisfaction or improvement were rated positively by more than half of the respondents, and ratings appeared higher this school year than last. More than half of the teachers expressed interest in learning more about how to lead LDC implementation at their schools, and 70% of teacher leaders and all administrators anticipated that their teachers would continue with LDC the following year.

- Participants across all groups perceived a positive impact on student outcomes. Approximately three quarters of both teachers and administrators agreed that LDC helped improve students' college and career readiness, literacy performance, writing, and content knowledge. The two most highly rated areas of impact, according to all three groups, were students' ability to complete writing assignments and quality of students' writing.

- Analysis of student outcomes confirmed participants' positive views. QED comparisons of treated and matched students revealed that LDC had statistically significant effects on Cohort 2 middle school students' English language arts (ELA) performance, with an effect size of .15 for students receiving LDC instruction in all three core content areas: ELA, science, and social studies/history. No statistically significant differences were found for students taught by Cohort 2 elementary school teachers or Cohort 1 returning middle school teachers.

Professional Learning Community and Teacher Collaboration

- Nearly all LDC teachers participated in LDC-oriented PLCs and approximately three quarters reported that their PLCs met at least every other week, the frequency

expected by the LDC program. For teachers, the most cited barrier to meeting every week was that PLC members had other priorities that competed with their participation. For teacher leaders the most cited barrier was that PLC time was not protected.

- The frequency with which PLCs met varied across schools and teachers' individual attendance rates also varied greatly. Although a majority of schools met attendance goals, a substantial number of schools experienced challenges related to protecting common planning time and ensuring that teacher participants regularly attended PLC meetings.

- Both teacher surveys and PLC reflection forms indicated that PLC meetings typically lasted 45 minutes to an hour or an hour or more, again generally meeting the LDC standard.

- Teachers valued the collaborative nature of LDC and its PLCs. A large majority of teachers credited LDC with making them more likely to collaborate with other teachers, not only within their grade levels and content areas but outside of them as well.

- Almost two thirds of teachers reported that they had sufficient time to meet during PLC sessions, and about three quarters felt that their administrators protected allocated resources to ensure that they could meet. However, the most frequently requested modification for future years was for more dedicated time during and outside of PLCs to plan modules, implement, and receive feedback about implementation. Teachers also requested that LDC time be compensated, and that their schools should invest in substitute coverage to allow for more professional development time.

LDC Training and Support

- Teachers were nearly uniform in their positive attitudes about the value of their PLC participation. They found the PLCs a safe space for sharing instructional plans, problem solving, and learning to develop modules.

- Teacher leaders were almost universally reported to be highly approachable, supportive, knowledgeable, and helpful, which suggests that programmatic changes made for 2017–2018 were successful. During the 2017–2018 school year, local PLC leadership was assigned to the teacher leaders rather than the project liaisons, the teacher leaders were provided with a stipend, and principals and assistant principals were no longer permitted to play the role.

- Teacher leaders reported high satisfaction regarding the support they received from coaches, professional development offerings, and how the teacher leader role allowed them to be instructional leaders in their schools.

- Overall, LDC coaches received positive feedback on the survey, with 93% of teachers and 98% of teacher leaders reporting that their coaches gave them appropriate and timely feedback and support. Data, however, suggest room for improvement when it

comes to frequency and usefulness of coach feedback. Analysis of CoreTools analytic data revealed that many modules did not receive comments from coaches, and peer review functionality was used infrequently. Nearly half of teachers reported not using written feedback from their coaches, although those that did tended to find it useful.

- Most teachers rated CoreTools positively, demonstrating the success of changes LDC made prior to the 2017–2018 school year including further refinement of the content, sequencing, delivery of CoreTools' instructional content, and streamlining of participants' learning process. A majority of teachers found the online course materials clear, relevant, and useful and, contrary to last year, open-ended responses did not reference instructional content as a problem. Almost half of teachers, however, rated the ease of use of the online course material as either poor or fair, and a similar proportion did not find the videos useful. In addition, analysis of CoreTools data revealed that teachers were being exposed to a small proportion of the online course content, which suggests that there wasn't sufficient PLC time to cover the content LDC intended participants to engage with.

- While 87% of teachers agreed that their school had adequate technology to support LDC implementation, many teachers noted in their open-ended responses that there were glitches in conducting Zoom meetings. Teachers also suggested the value of more in-person time with coaches.

LDC Implementation

- Teachers reported adapting and/or creating at least two LDC modules on average in addition to selecting and using mini-tasks outside of the modules, meeting LDC program expectations. According to the survey data, more than 90% of teachers reported implementing at least two modules in their classrooms. Analysis of CoreTools data, however, show that only about one third of teachers uploaded student work for two or more modules (an important proxy for classroom implementation).

- Analysis of program data suggests that while nearly all participants were engaging with the module-building platform, the level of engagement did vary greatly across individuals and across subgroups (role, cohort, school level, content area) as evidenced by the large variation in the number of views, edits, and comments. More in-depth analysis of the portions of the modules teachers were editing confirmed the finding that engagement varied greatly across teacher participants, with about half of teachers failing to engage at a basic level by editing the teaching task, and other teachers engaging more deeply by editing multiple portions of modules.

- The majority of teachers (71% to 92%) reported success in nine key areas of LDC module development. Teachers were most confident in selecting focus standards, creating the writing assignment, identifying skills needed in the module, and making writing assignments relevant and engaging. The module analysis, however, suggests that the materials adapted and created by PLC members varied in levels of completion and quality and using uploaded student work as an indicator, it appears that a sizable proportion of modules might not have been implemented in the classroom.

- With regard to their classroom implementation of LDC modules, the majority of teachers reported success with all six key areas queried (79% to 87%). Teachers were most confident with engaging students in complex text, locating evidence of standards in final student work, and engaging students in understanding the assignment and rubric.

- Ratings of module quality increased from last school year to this school year, with elementary modules appearing relatively stronger than the secondary school modules.

Leadership Support

- Almost all teachers and teacher leaders reported that their administrators encouraged LDC participation at the school. The majority of teachers and teacher leaders agreed with administrators that they allocated resources to ensure that LDC teachers could participate in meetings. Administrators generally voiced strong support for LDC, but there were differences with how active teachers and teacher leaders viewed that support. LDC may want to understand the differences in these perceptions better.

- Overall, both administrators and teacher leaders took advantage of in-person meetings offered by LDC. There was great variation, however, in how frequently teacher leaders met over the phone with coaches for planning purposes.

- Compared to uniformly positive ratings by school administrators on most items, their ratings of district support were relatively low. This too signals an area where LDC may need to strengthen its efforts.

Impact on Teacher Practice

- The majority of teachers reported improving their practice in seven LDC-related skills (75% to 84%). Teachers felt they learned most in selecting focus standards, creating standards-driven writing assignments, and identifying skills students need in writing assignments (skills concentrated at the beginning of the LDC learning cycle).

- Approximately 80% of teachers agreed that participating in LDC raised their expectations for students' writing, helped them incorporate writing assignments into their existing curriculum, and made them more likely to collaborate with other teachers on designing instruction.

Subgroup Effects

Cohort 1 new teachers' survey responses were less enthusiastic than their peers on a number of dimensions of LDC training, support, implementation and impact. These dimensions included the effectiveness of the PLC, usefulness of coach feedback, and teachers' own capacity to be a part of shaping the initiative. CoreTools analyses also showed that Cohort 1 new teachers demonstrated less engagement in terms of viewing, editing, and commenting on modules. These findings may signal the challenge of new teachers entering existing PLCs. These teachers may have felt less sense of belonging and/or that they were trailing behind teachers who had participated the prior year. Oddly however, Cohort 1 new teachers' modules were

rated more highly than other teachers and Cohort 1 returning teachers rated relatively the lowest, although sample size and representativeness limit any generalization.

There were few differences by school level. Despite this, Cohort 2 elementary school teachers appeared more confident in their ratings and the elementary school modules appeared stronger than did those developed by teachers at the secondary school level. A rare instance of secondary school advantage was in the area of administrator support and involvement.

The fidelity of implementation analysis did not reveal differences in average overall levels of fidelity between Cohort 1 and 2 schools, and between elementary and middle schools.

Conclusions

LDC's second year of implementation shows the results of its continuous improvement efforts and a positive trajectory toward program success. Changes made based on last year's evaluation results—such as the further streamlining and refining of online courses and the changing of the school liaison role to that of a teacher leader—have paid off in greater participant satisfaction and greater fidelity to the program's logic model.

Evidence suggests that second year implementation was largely faithful to the structure of LDC's implementation model, although in many cases individual teachers and schools were not meeting implementation goals. Most PLCs met at least every other week as they were expected to do, but a sizable minority struggled to protect common planning time and ensure high attendance rates. Participants engaged with CoreTools resources, but to varying degrees. Coaches provided feedback through multiple mechanisms, and PLC members reported appreciating this feedback, but feedback was not uniform and not all teachers found it useful. Teachers also reported meeting LDC expectations for module development and implementation, although data from the CoreTools analyses suggest that, for some teachers, module development and implementation may not have been fully complete.

The data from all respondents' surveys, coupled with the analysis of module quality, suggest that LDC is benefiting most teachers' pedagogical skills and particularly their ability to integrate standards-based writing assignments and assessment into their curriculum. Outcome results also are promising. Not only do all respondents perceive LDC's positive results on student learning—particularly with regard to literacy skills and writing—but performance on the state ELA test revealed a statistically significant, positive effect for Cohort 2 middle school students.

This year's results revealed some areas of challenge. While the majority of participants were satisfied and positive about the benefits of LDC, significant proportions were not in a number of areas. For example, while the great majority of teachers were confident and noted improvement in areas related to creating standards-based teaching and writing tasks, and evaluating them, sizable minorities were less confident about the specifics of planning lessons

and practicing formative assessment. LDC should consider what can be done do to strengthen their efforts in these areas and/or target further follow-up support for teachers during the coming year.

Adequate time was a frequently cited concern. Respondents voiced that they hoped for more collaborative time, more prep time, time before the start of the year, and/or compensated time. Technology also remained a problem for some participants. While some respondents were frustrated with technical problems that marred the experience of Zoom meetings, others would have simply preferred in-person rather than digital meetings with coaches. Participants also seem to have made relatively limited use of the CoreTools interactivity, for example with regard to commenting and revision. Some participants also reported frustration with CoreTools usability and the utility of its video resources.

Survey responses also suggest that leadership support needs continuing attention. Although teachers and teacher leaders were generally positive about their school leaders' knowledge of and support for LDC, these leaders did not seem to meet LDC's expectations for being involved in program implementation by observing and providing feedback to participants. Similarly, administrator responses suggested that district support was a relative weakness.

Finally, one new issue that surfaced this school year was the challenge faced by new teacher participants joining established PLCs. Survey responses and CoreTools analyses showed that teachers who recently joined PLCs at Cohort 1 schools in 2017–2018 appeared less satisfied and less engaged in LDC than did their peers. LDC may want to inquire further into the reason for these findings and/or consider how to facilitate PLC entry for new participants, and how to differentiate program resources and support to meet their needs.

As we noted, this report presents interim findings, before most participants have had the two years of experience with the program that LDC believes they need to meet program goals. The findings at this point are definitely positive. The 2018–2019 school year will provide that crucial second year of experience and, barring unexpected attrition, strong data for fully examining the implementation and effects of LDC's i3 implementation, and the factors that contribute to LDC success.

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1.0 Introduction

The Literacy Design Collaborative (LDC) was created to support teachers in implementing Common Core State Standards (CCSS) by integrating literacy skill development throughout the content areas. The LDC Investing in Innovation (i3) project focuses on developing teacher competencies through job-embedded professional development and the use of professional learning communities (PLCs). Teachers work collaboratively with coaches to develop their expertise further and design standards-driven, literacy-rich writing assignments within their existing curriculum across all content areas. LDC is a national community of educators providing a teacher-designed and research-based framework, online tools, and resources for creating both literacy-rich assignments and courses across content areas. Used by individual teachers, schools, and districts in 40 states for the past four years, LDC also is a statewide-adopted strategy for Common Core implementation in Kentucky, Colorado, Louisiana, and Georgia.

UCLA's National Center for Research on Evaluation, Standards, and Student Testing (CRESST), in collaboration with its partner Research for Action (RFA), engaged in the evaluation of LDC implementation and its impact on student learning and teacher effectiveness starting in June 2011, via two parallel research studies funded by the Bill and Melinda Gates Foundation. Those studies included an examination of LDC implementation in eighth grade social studies and science classrooms in Kentucky and Pennsylvania and a districtwide implementation in sixth grade advanced reading classes in a large district in Florida. Results for the studies are available in two CRESST reports (Herman et al., 2015a; Herman et al., 2015b), as well as a journal article published by AERA Open (Herman, Epstein, & Leon, 2016).

Currently, CRESST serves as the independent evaluator for LDC's federally funded i3 validation grant. The LDC i3 study is examining the implementation and impact of LDC in two large urban school districts: New York City Department of Education and a large school district on the West Coast (the latter of which this report is focused on). The evaluation study is a comprehensive mixed-methods evaluation to understand the impact of LDC on student learning using a quasi-experimental design (QED), as well as to document LDC's impact on teacher skills and practices. Specifically, the evaluation study addresses a wide range of questions about program characteristics, conditions, and impacts in the context of two large urban school

districts. The study draws on data from two cohorts of schools, with each school housing a PLC of teachers who engage in professional learning about LDC and implement LDC mini-tasks and modules in their classrooms. The study measures teacher implementation and skill improvement with teacher surveys, analytic data from LDC's online CoreTools module building platform, and artifact analysis. While we document the core strategies of the LDC model as implemented and provide support for LDC improvement, the central focus of our comprehensive mixed-methods evaluation is examining the impact of LDC on teacher practices and student learning using a quasi-experimental design.

The first i3 evaluation cohort of schools began implementing LDC during the 2016–2017 school year, and the second cohort of schools began implementing LDC during the 2017–2018 school year. This annual progress report examines LDC implementation during the 2017–2018 school year in a large, West Coast school district. (A parallel progress report focusing on implementation in the New York City Department of Education, NYCDOE, will be prepared once the student outcome data become available and we finish conducting the analysis.) The current annual progress report presents results from (a) surveys of classroom teachers, LDC teacher leaders, and school administrators; (b) analyses describing how LDC participants interacted with the CoreTools module building platform; (c) rating by CRESST of instructional modules created by LDC participants; (d) analysis of the fidelity of implementation across multiple key components, indicators, and data sources; and (e) student outcome analyses using the quasi-experimental design.

Survey results provide a window into how LDC was implemented in 2017–2018, the perceived utility and effectiveness of various program components, and the perceived impact of LDC on both teacher and student skills and knowledge. The analysis of CoreTools user data and modules created and adapted by teachers provides evidence on the level of engagement with the online platform and module design process, and the quality of the products created by the teachers and PLCs. Fidelity of implementation analysis, utilizing the fidelity matrix designed collaboratively by LDC and CRESST, provides a broad picture of how schools and the program as a whole performed on key fidelity indicators in 2017–2018. Exploratory analyses of the effectiveness of LDC in increasing student learning for Cohort 1 schools with two years of LDC implementation and Cohort 2 schools with one year of implementation are also included in the report. The confirmatory analysis will be conducted next year by pooling teachers from both Cohort 1 and 2 schools who implemented LDC in two consecutive years and their students.

1.1 Logic Model

The logic model includes four key intervention components that are predicted to be the drivers of change in teacher practice and student learning (see Figure 1.1). These components include a coach-supported *Professional Learning Community* formed to implement the LDC intervention at the school site and provide a space for teacher collaboration; *asynchronous support from coaches* primarily in the form of feedback in CoreTools through comments and

peer review; *implementation activities* completed by participating teachers including module development and classroom implementation; and *leadership support* at different levels. Note that the model also indicates LDC's expectations for the level of implementation in each area.

LITERACY DESIGN COLLABORATIVE i3 LOGIC MODEL

LDC KEY COMPONENTS		MEDIATORS	STUDENT OUTCOMES		

Activities	Participation		Short term	Medium term	Long term
Common Planning time for LDC Professional Learning Community (PLC) with synchronous coach support	- PLC members participate in at least 60 minutes of common planning time during each consecutive two weeks. - Digital coach joins PLC every other week. - Sequencing incorporates blocks from LDC online courses.		Student engagement	Increased CCRS skills Improved test scores Higher rates of course completion	Students acquire knowledge and skills to be college and career ready Educational attainment increases Higher graduation rates Increased labor market outcomes
Asynchronous support from LDC coaches	Coach provides feedback on modules in CoreTools via comments and peer review rubric ratings.	Increased teacher expertise and skill development			
Teacher implementation activities	- Teachers develop at least one module per year in Years 1-2. - Teachers teach at least two modules per year in Years 1-3.				
Leadership support at different levels	- District instructional specialists visit schools three times per year to sit in on PLC, meet with principal and teacher leader, and observe instruction. - Principals participate in LDC by protecting PLC time, setting goals for LDC work, facilitating & participating in school visits from district instructional specialists, and observing LDC instruction. - Teacher leaders facilitate PLC on the ground, collaborate with administrator, and communicate regularly with coach.	More effective CCRS-aligned instruction and use of formative assessment			

Contextual Factors: District support, school and student demographics, other policies and initiatives

Figure 1.1. LDC i3 logic model.

The logic model predicts that the four key components will lead to increased teacher expertise and skill development and more effective Common Core aligned instruction that incorporates ongoing formative assessment. In turn, increased teacher capacity and more effective instruction will lead to increased student engagement in the short term; increased student skill acquisition, higher test scores, and higher rates of course completion in the medium term; and improved college and career readiness, education attainment, graduation rates, and labor market outcomes in the long term.

Note that the logic model was revised based on refinements to the program in response to learning from both the pilot year (2015–2016) and the first year of Cohort 1's implementation (2016–2017).

1.2 Evaluation Questions

Our evaluation questions focus on addressing three main areas: program characteristics and implementation, contextual factors and implementation, and program impacts. This progress report provides findings on many, but not all, of the evaluation questions. In particular, there is limited information available regarding program impacts. This report provides an *exploratory* look at how the refined LDC model is impacting the learning of students under Cohort 1 teachers in their second year of implementation and Cohort 2 teachers in their first year of implementation. The first *confirmatory* analysis will be conducted after Year 2 data are available for both cohorts of schools/teachers; that analysis will first be shared in next year's annual report.

1. Program Characteristics and Implementation

   a. Who are the participating teachers and schools? Are they representative of the teacher/school populations of the respective district on years of teaching, education level, prior student performance, etc.?

   b. How is the LDC program implemented in each district? What are the core components (e.g., training, tools, on-site or other direct support) and who are the key participants? In what ways did the LDC implementation align with the intended model?

   c. In what ways do teachers implement the LDC tools in their classrooms? To what extent do teacher practices align with intended LDC practices?

   d. How are teachers utilizing the online LDC system (including online tools, exemplars, collaborative workspaces, and technical assistance) in terms of frequency and use of key features? Does this vary by teacher characteristics? What are teachers' perceptions of the value and quality of the online LDC system?

   e. What types of LDC professional development opportunities are offered to and utilized by teachers at each school/district? Are teachers and schools satisfied with the LDC professional development opportunities they received?

2. Contextual Factors and Implementation

   a. What factors facilitate or hinder successful implementation of the LDC model at the teacher, school, and district levels?

   b. How can implementation of the model be improved at the teacher, school, and district levels?

   c. What other educational reforms are being implemented in the participating schools and districts? What are their influences on LDC adoption in the schools and districts? Are schools able to align reform efforts?

   d. What are the roles of school and district leadership in shaping the LDC implementation?

3. Program Impacts

    a. What is the impact of LDC on the academic performance of participating students as measured by the state assessments?

    b. Do the academic impacts vary by student subgroup including prior achievement, race, ethnicity, socioeconomic status, gender, language proficiency, and/or disability? Does LDC help close the achievement gap between student subgroups?

    c. Do the academic impacts vary by student grade level or subject?

    d. What is the impact of LDC on teacher skill improvement and learning as measured by CoreTools and by the quality of LDC modules they produce? What is the self-reported impact of LDC on teacher learning?

    e. To what extent do teachers report changes in their practice (e.g., teaching strategy, collaboration with others) and changes in their comfort in implementing CCSS during and after the LDC intervention?

    f. What is the relationship between the fidelity of implementation, fidelity of intervention, and student learning? What are the conditions and contexts under which LDC tool use is most effective?

    g. To what extent do Cohort 1 participating schools and teachers continue their LDC-influenced practices in the 2019–2020 school year after LDC support ends? What contributed to their decision to continue or stop? What factors contributed to their levels of continued implementation? How does Cohort 1's actions align with their previously stated intentions for continuation of LDC-influenced practices as reported in spring 2017? To what extent do Cohort 2 participating schools and teachers plan to continue their LDC-influenced practices after LDC support ends?

2.0 Study Methodology

In this chapter, we provide an overview of the methodology behind this look at LDC as implemented in 2017–2018. We begin by describing the various instruments and data sources for the analyses, including surveys of classroom teachers and teacher leaders participating in PLCs and administrators overseeing the implementation; analytic data from LDC's CoreTools platform; module artifacts including samples of student work; LDC administrative data; and district administrative data on students and teachers used for outcomes analyses. We then describe the sample of educators and schools for each of these data sources. Finally, we discuss the methodological approaches for the various analyses we conducted.

2.1 Data and Instruments

We next describe each of the data instruments and the elements they contain. Most variables are measured at the teacher level, which is the unit at which the LDC intervention is being implemented. Administrative data for the analysis of the impact of LDC on student learning includes school-, teacher-, and student-level variables.

Surveys (teachers, teacher leaders, and administrators). In collaboration with LDC, CRESST made minor revisions to the 2016–2017 surveys. These refinements involved streamlining the language of certain questions, in particular those capturing teacher pedagogical practice and the perceived impacts of LDC on teachers and students. In a few cases, questions and items were also added to collect systematic information on program conditions and impacts that were observed by LDC and CRESST anecdotally.

In 2017–2018, four different surveys were administered to LDC participants playing three different roles: teacher, teacher leader, and administrator. Some teacher leaders were classroom teachers who implemented LDC with their students, while other teacher leaders were out-of-classroom faculty (coaches or coordinators); these two groups received different versions of the survey tailored to their roles. Thus, four versions of the surveys were administered in spring 2018: (a) teacher, (b) teacher leader (for coaches and coordinators), (c) teacher leader (for teachers), and (d) administrator.

The surveys were designed to capture multiple perspectives on key aspects of LDC's logic model (see Figure 1.1),[1] and to provide data to answer the evaluation's research questions presented earlier. Survey questions targeted at the three roles fall under the domains and subdomains in Table 2.1. Domains were selected to align with the LDC i3 logic model and with the CRESST evaluation questions. Note that most domains cover multiple subdomains, constructs, and survey questions. *Professional Learning Community/Teacher Collaboration,* for example*,* captures the intensity, frequency, and collaborative environment of common planning time; *LDC Training and Support* includes quality of online courses, utility and effectiveness of

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[1]The survey domains were aligned to this version of the logic model for the pilot year. The logic model has since been revised to align with the revised LDC implementation plan.

coach support, etc.; and *LDC Implementation* encompasses module creation, classroom implementation of modules, and module peer review.

Table 2.1

Survey Domains for Three Respondent Groups

Domain	Teacher	Teacher leader	Administrator
LDC participation	X	X	X
Professional learning community/teacher collaboration	X	X	X
LDC training and support	X	X	X
LDC implementation			
• Module creation	X	X	
• Classroom implementation	X		
• Module peer review	X		
Alignment		X	X
Leadership support			
• Teacher leader support	X		
• School administrator support/classroom observation	X	X	X
• Teacher leader leadership role	X	X	X
• District support		X	X
Impact			
• Impact on teacher practice and learning	X		X
• Impact on student learning	X		X
Scale-up and sustainability		X	X
Facilitators and barriers	X		
Areas of improvement	X	X	X

Teachers and administrators were asked to reflect on both LDC's *Impact on Teacher Practice and Learning* and *Impact on Student Learning.* Questions within a number of domains further asked respondents to reflect on conditions and supports that may potentially impact LDC's implementation. These domains included teachers' perceptions of *Facilitators and Barriers* to implementation and perceptions regarding leadership roles and support for LDC at different levels. Teacher leaders and administrators were also asked for their perceptions regarding if and how LDC would be sustained and expanded within the school. Finally, all respondents were asked open-ended questions regarding *Areas of Improvement* for LDC

implementation. Teacher, teacher leader, and administrator surveys can be found in Appendices A, B, and C.

LDC CoreTools. The CRESST team received the LDC program data on i3 participants' interactions with the CoreTools module-building platform. The data files captured a number of behaviors including document page viewing, document editing, document commenting, coach use of peer review, exposure to LEARN instructional cycle content, and uploading of student work. The data contained date- and time-stamped records of participants' activities in all of these areas.

Using these data files, we were able to analyze variation in the number of times the participants viewed, edited, and commented on documents across the school year. We generated descriptive statistics (minimum, maximum, mean, and standard deviation) for the number of times participants viewed a document page, edited a module document, and commented on a module document. We then produced descriptive statistics on these behaviors for each role group (teacher, teacher leader, and administrator), school level (elementary, middle, and high), cohort, and content area subgroups. We also compared the average engagement in these key activities across two groups: teachers who completed the modules we rated in Chapter 5 of this report and those teachers who did not complete a module. The results on these overall metrics of engagement are reported in Chapter 4.

CoreTools data were also used to analyze to what extent (a) teachers were exposed to instructional cycles of LEARN content; (b) coaches provided feedback via commenting and peer review functions; (c) teachers edited key portions of modules; and (d) teachers uploaded student work (a proxy for classroom implementation). Results for these indicators are reported in Chapter 6.

Modules. Our existing module rating rubrics (Reisman, Herman, Luskin, & Epstein, 2013) were designed to examine the instructional quality and coherence of the LDC modules, and to address the rigor in both content and literacy development materials (i.e., template task, student work samples, and descriptions of the pacing and goals of the modules). The first two dimensions examined the quality of the teaching task, while the remaining four dimensions focused more holistically on module quality: (a) effective writing task; (b) alignment to the CCSS and local and state literacy and content standards; (c) fidelity to LDC module instruction; (d) quality instructional strategies; (e) coherence and clarity of module; and (f) overall impression. Each of the dimensions was rated using a 5-point scale with anchor points on the first five dimensions ranging from *not present or realized* to *fully present or realized* and the final dimension ranging from *inadequate* to *advanced* LDC module implementation. This scale mimics the structure of the three-level LDC jurying system scale that uses the ordered anchors of *work in progress*, *good to go*, and *exemplary quality*. For each dimension, a 1 represented the lowest possible level of quality, while a 5 represented the highest level of quality (see Appendix D).

LDC administrative records. The fidelity matrix analyses in Chapter 6 utilize administrative records collected by LDC as part of their ongoing program management. These records include (a) PLC reflection forms, and (b) attendance records for in-person meetings organized for the benefit of school administrators and teacher leaders. The PLC reflection form captures attendance at regular PLC meetings, the amount of time spent on LDC during these meetings, whether teacher leaders had a separate planning call with coaches, and the subjects that PLCs were working on during sessions.

Administrative data used in student outcomes analysis. Student-level variables utilized in the outcome analysis included race/ethnicity, gender, poverty status, special education status, English language proficiency, gifted status, grade, and baseline achievement in mathematics and ELA and outcome year achievement in ELA on state assessments. Teacher-level indicators obtained and utilized included years of teaching experience and teacher attendance. We also requested and received roster files that establish a link between teachers and students via specific courses.

2.2 Sample

Twenty Cohort 1 schools began implementing the LDC program in the 2016–2017 school year, with 154 classroom teachers participating and 34 administrators overseeing the work (see Table 2.2). The 20 Cohort 1 schools included 11 elementary schools, four middle schools, one high school, two K–8 schools, one 6–12 school, and one K–12 school. The program, however, experienced a high level of attrition from 2016–2017 to 2017–2018, as summarized in Table 2.2. Nearly one third of schools dropped out of the program after 2016–2017, and within the remaining schools, nearly half of teachers did not continue with LDC in 2017–2018.

Table 2.2

Attrition of Cohort 1 Teachers, Administrators, and Schools

Sample	Teachers	Administrators	Schools
Participated in LDC in 2016–2017	154	34	20
Dropped out of LDC after 2016–2017	98	14	6
Remained in LDC in 2017–2018	56	20	14
Attrition rate	64%	41%	30%

To better understand teacher retention rates of LDC schools after the 2016–2017 school year, we conducted an interview study of school administrators. Twenty principals and assistant principals volunteered to be interviewed. The principal interviews show the diversity of reasons for why schools were able to retain teachers, and they also show why teachers left. The main reason for teacher retention involved teacher and grade-level team decisions to leave or stay, followed by the principals' decision to switch participation of teachers between the two years.

Buy-in also seemed to affect teachers' decisions on whether to continue. See Appendix E for a detailed description of the results as well as the methodology for the study.

A new cohort of schools started in the 2017−2018 school year. Cohort 2 included 31 schools in total, including 20 elementary schools, eight middle schools, two K−8 schools, and one 6−12 school. Because of the high level of attrition in Cohort 1 and the greater number of recruited schools in Cohort 2, over two thirds of the participating teachers and administrators in 2017−2018 were from Cohort 2. In addition, 34 new participants joined the existing Cohort 1 schools in 2017−2018. Table 2.3 shows the number of participants in 2017−2018 by cohort category and school level.

Table 2.3

Number of Participants in 2017−2018 by Cohort and School Level

Cohort	Elementary	K−8	Middle	6−12	High	Total
Cohort 1 returning participant	40	0	30	0	6	76
Cohort 1 new participant	20	0	6	0	8	34
Cohort 2 participant	154	21	49	16	0	240
Total	**214**	**21**	**85**	**16**	**14**	**350**

Table 2.4

Distribution of Modules Rated by Grade Band, Cohort, and Subject

	Elementary		Secondary		Total	
Variables	#	%	#	%	#	%
Cohort						
Cohort 1 returning	12	11.32	15	23.44	15	23.44
Cohort 1 new	11	10.38	7	10.94	7	10.94
Cohort 2	83	78.30	42	65.63	42	65.63
Subject						
ELA	43	40.57	28	43.75	28	43.75
Science	43	40.57	16	25.00	16	25.00
Social studies	20	18.87	20	31.25	20	31.25
Total	**106**	**62.35**	**64**	**37.65**	**64**	**37.65**

In addition to the CoreTools analytic files, we also received module artifacts from LDC for an analysis of the quality of module design. We restricted our analysis to modules that were

created during the 2017–2018 school year and included original uploaded student work samples. This restriction yielded a pool of 326 modules that were authored or coauthored by 206 teachers (nearly three quarters of all participating teachers) and one coach, across 42 schools. Because the number of modules surpassed available resources for rating, we sampled the last module created by each teacher wherein they served as the sole or lead author. Our intent was to represent teachers' best LDC work, and presumably, modules created later in the school year would be more skilled than those created earlier would. The total sample was 170 modules. Table 2.4 provides further detail about the distribution of modules. We also conducted an exploratory analysis of the seven teachers who created complete modules during the 2016–2017 and 2017–2018 school years.

We now turn to Table 2.5, which displays the overall population and sample sizes for the different study measures and analyses included in this report. This includes all participants in 2017–2018 across the three cohort categories: Cohort 1 returning, Cohort 1 new, and Cohort 2. As can be seen, data were available for a large majority of the participants. Ninety-five percent of teachers consented to participate in the study, with 84% of all teachers completing the survey in spring 2018. The consent rate for administrators (94%) was comparable to that of teachers while the survey response rate for administrators (63%) was considerably lower than the teacher rate. Nearly all teachers (99%) and administrators (95%) were present in the CoreTools dataset, which was provided directly to CRESST by LDC, and did not depend on teachers' individual study consents. A smaller percentage of teachers (78%) were present in the PLC reflection attendance data.

Table 2.5

Number of Participating Schools and Teachers in the District and Sample Size for Different Instruments

Instruments	Classroom teachers	Administrators	Schools
Participated in LDC	286	64	45
Consented to CRESST study	271	60	45
Completed survey	246	40	44
Present in CoreTools dataset	282	61	45
Authored/coauthored a module with student work uploaded	206	1	42
PLC reflection forms	225	45	45
Leader in-person meeting attendance	N/A	N/A	45
Included in outcomes analysis	148	N/A	36

The school district required individually signed consent forms before releasing teacher data and teacher/student rosters, so for the outcome analysis, we only received data on

teachers who consented to participate in the study. As described in detail later, there were sufficient data to conduct separate exploratory quasi-experimental analyses of impact for Cohort 1 returning middle school teachers, Cohort 2 elementary school teachers, and Cohort 2 middle school teachers. The final row in Table 2.5 reflects the total number of teachers and schools that were represented in these three analyses. There was insufficient student sample size to conduct analyses of the impact of Cohort 1 new participants or Cohort 1 returning elementary school participants, so the teachers in those groups were not included in analyses. The sample was further restricted by the need for student achievement data for both the outcome year (2017–2018) and the baseline year (2015–2016). As a result, participants teaching either in high school or the primary elementary grades (K–3) were not included in the student outcome analyses. Middle school teachers who did not teach a core ELA, science, or social studies/history class were also excluded from the analyses. Overall, due to all these restrictions, the quasi-experimental analyses represented just over half of the participating LDC teachers in 2017–2018.

2.3 Survey Recruitment and Administration

As previously noted, roughly one third of the 2017–2018 sample was made up of teachers and administrators from Cohort 1 schools, from whom CRESST and LDC had obtained study consent in 2016–2017. The recruitment and consent of the new participants was conducted during the 2017–2018 school year. This was begun at the beginning of the school year with authorized staff attending the LDC Launch Days. Since most LDC participants were unable to attend these events, CRESST and LDC also conducted recruitment and the consent process through in person contact, video conference, and email. As required by the UCLA Office of the Human Research Protection Program, all consent forms included language stating that the study was voluntary, that data would be protected, and that by signing the form, participants consented to be emailed an electronic survey in spring 2018 and to have CRESST request district data linking them and their students. All participating teachers, teacher leaders, and administrators were also compensated with a $50 gift card after completing the survey.

Surveys were administered in spring 2018. CRESST coordinated with LDC staff and coaches to administer the online surveys during common planning sessions. Multiple email reminders were sent to participants who were not present at these sessions or who otherwise did not complete the survey. The teacher survey was closed at the end of the school year in June 2018. Administrator surveys were left open until early August when LDC staff met with administrators to plan for the next school year.

2.4 Module Rating Process

LDC requirements specified that all teachers implement at least two modules over the course of the school year, with the first spanning one week based on one text and the second spanning across multiple weeks and incorporating multiple texts. Modules could be developed as original units of work or could be adapted from existing modules within the LDC CoreTools

Library. Modules could also be either developed or adapted in solo or collaboratively with other teachers within their PLC.

To be included in the analysis, modules were required to include a completed module template and at least one student artifact. In total, 326 modules met the above criteria, with each teacher authoring and/or coauthoring between one and four modules. As previously noted, to align with our research questions and to ensure the feasibility of the rating process, it was decided to rate the last module created by a teacher (as a first author) that included the required materials. In total, 170 modules were rated with 56 or 32.9% being rated by two panelists. Further details about the modules can be found in Appendix F.

Seven expert raters with experience teaching in the targeted grade spans and content areas were recruited from schools in Los Angeles County. Four panels were convened with two experts rating each of the following sets of modules: elementary ELA and social science, elementary and secondary science, secondary ELA, and secondary social science. It should be noted that one rater served on both the secondary ELA and the secondary social science panels.

Separate trainings lasting approximately two hours were conducted for each panel of expert teachers. All trainings were conducted by a member of the evaluation team who is an expert on the Common Core and the rating of student and teacher artifacts. The training included an overview of the LDC goals, template task, the structure of the modules, and the CRESST rating dimensions. Once the training was complete, calibration was conducted by having teachers individually rate and then discuss their ratings for one module in the content area on which they would be focusing. Rating was then conducted on subsequent days with each module individually evaluated. Those modules rated by two expert teachers were then discussed with the goal, but not the requirement, to reach consensus (see Carlson & McCaslin, 2003). All discussions were facilitated by the same evaluation team member who conducted the initial training.

2.5 Analytical Approaches

Both quantitative and qualitative analytic methodologies were applied to the data to answer the evaluation questions about how LDC was implemented, conditions affecting implementation, and program impacts. The following describes the approaches used to analyze each data set.

Surveys. Survey responses were analyzed using descriptive statistics for multiple-choice items and qualitative coding for open-ended responses. As previously noted, surveys were administered to teachers, teacher leaders, and administrators. Some teacher leaders were classroom teachers while others were coaches or coordinators. Because of this, the samples were not mutually exclusive, with teacher leaders who taught in the classroom represented in both the teacher and teacher leader results. Generally, we report the number and percentage of respondents who selected different multiple-choice options. In a few cases, where responses are numerical rather than categorical, we present means rather than proportions. Descriptive

statistics for all multiple-choice items are presented in full in Appendix A for teachers, Appendix B for teacher leaders, and Appendix C for administrators. Responses are organized by domain and specific questions are identified by question number. For example, we summarize the domain of LDC participation in one section, but rely on information from four questions. We preface teacher questions with "T," teacher leader with "TL," and administrator questions with "A."

LDC CoreTools. The first stage of our analysis examined the proportion of all participants who created CoreTools user accounts, and engaged in three key behaviors: viewing, editing, and commenting on modules. We then analyzed each of the three key measures of participants' interaction with the LDC online tools, and reported frequencies and/or descriptive statistics (e.g., minimum, maximum, mean, standard deviation) as measures of participants' engagement with the online LDC system. In addition to reporting the overall results, we provide results by cohort, the content areas taught (ELA, social studies/history, and science), by participant role (teacher, teacher leader, and administrator), and school level (elementary, K–8, middle, 6–12, and high) whenever feasible. Finally, we explored the difference in CoreTools engagement between two groups of teachers: those who completed and taught modules and those who did not appear to complete the design and implementation process.

Modules. We used descriptive statistics (means, standard deviations, and percentages) to analyze overall and subgroup performance for each content area and school level on each of the six dimensions. Additionally, generalizability theory (G theory) was used to examine potential sources of error during the rating process to help determine the validity of the scores as well as the construct validity of the rubrics (see Shavelson & Webb, 1991). Finally, teacher comments during the debriefings were examined to determine other potential issues with the rubrics and/or rating process.

Fidelity of implementation analysis. Fidelity of implementation analysis involves descriptive analyses of a variety of data sources, including teacher survey, CoreTools data, PLC reflection data, and attendance records for administrator and teacher leader in-person meetings. As outlined in the fidelity matrix (see Appendix G), fidelity levels are set at the teacher, module, school, and program levels. The process for most indicators involves several levels of aggregation, with, for example, module editing being measured at the teacher level, school level, and program level. School- and program-level scores are typically based on the proportion of teachers or modules that met the threshold for adequate implementation.

Student outcomes. We employed a quasi-experimental design to examine the effect of LDC on the Smarter Balanced Assessment Consortium (Smarter Balanced) ELA assessment scores of students in the participating LDC elementary and middle schools in 2017–2018. Before conducting the analysis, we used a two-step matching process to identify a reduced pool of comparison students and teachers at schools with similar characteristics to the schools in the intervention sample.

To accomplish this, we first identified the five most similar comparison schools for each intervention school based on a Euclidian distance measure, by using the nearest neighbor analysis option in SPSS 24.0 (see Fix & Hodges, 1951; Wang, Neskovic, & Cooper, 2007). The variables used in this process were the percentage of students eligible for free or reduced price lunch, the percentage of African American students, mean baseline student achievement in ELA, mean baseline student achievement in mathematics, the average attendance rate of teachers, the percentage of teachers with three or fewer years of teaching experience, and the school grade span where feasible. We generally used all five identified comparison schools to establish the potential matching pool, but for selected LDC schools we only used four of the initial five matches. Once the pool of comparison schools was identified, their students and teachers were also identified, and student-level matching was conducted so that the resulting sample would resemble the type of sample one would expect to obtain through random assignment.

The student-level matching technique we employed was coarsened exact matching (CEM) (Iacus, King, & Porro, 2011). CEM is a flexible matching approach with many favorable properties and allows the researcher to specify the precise conditions under which students are matched. For categorical variables, such as race/ethnicity or free or reduced price lunch status, this can entail exact matching, while for continuous measures, such as baseline individual student achievement and aggregate class-level achievement, cut-points for matching can be specified. With this approach we were able to set precise cut-points on the most important baseline indicators, such as baseline academic achievement, to ensure that where possible every treatment student was matched with a suitable comparison. Student matching variables we used in CEM included Hispanic, Black, poverty status, female, English language proficiency (English language learner), special education status, gifted status, mean baseline achievement in mathematics and ELA, and grade level.

During matching we also included a few variables capturing information on the teachers and peers to whom students were exposed. These variables included mean baseline ELA achievement of the student's peers in his/her core content classes, and the average years of teaching experience of the student's core content teachers.

The typical structure of course taking at the middle school level involves students being exposed to multiple teachers, with each responsible for a different core content class. Specifically, middle school students in the study had exposure opportunities across three content areas taught by intervention teachers (ELA, science, and social studies/history). As a result, students were not necessarily nested under individual teachers, but instead were likely to have connections to multiple teachers in the available time period prior to each testing outcome (students at the elementary school level were also sometimes exposed to multiple teachers, but to a lesser extent). Therefore, LDC effects were estimated using an extension of the standard multilevel modeling framework known as multiple membership multiple classification (MMMC; Browne, Goldstein, & Rasbash, 2001).
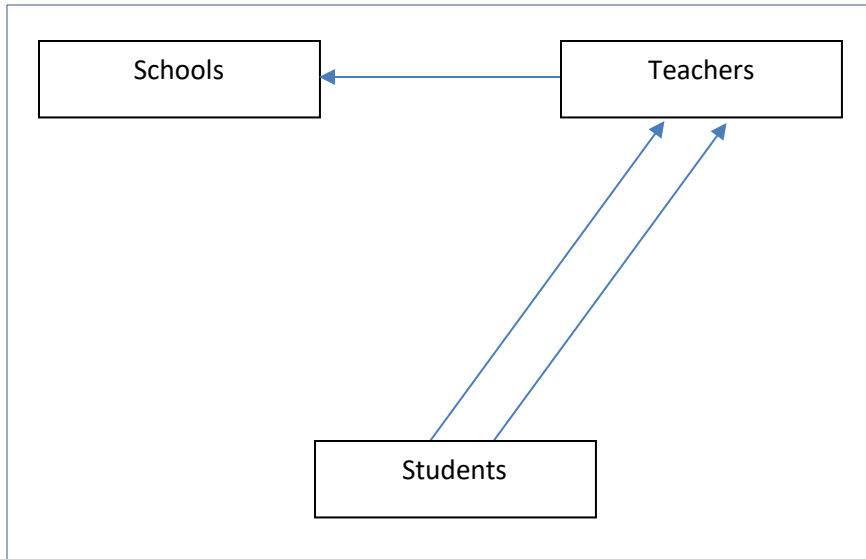
Figure 2.1. Multiple membership multiple classification structure.

In the MMMC modeling approach, each observation at the lowest level represents one student (see Figure 2.1). The weight each teacher receives with respect to each student is dependent on the student's exposure to his or her teachers in each of the three core content areas. The total student exposure adds to a unity (i.e., a possible total exposure of 1) across their courses in the three content areas in a given school year. While this general weighting approach applies to both elementary and middle schools, the course structure of the datasets required us to use different weighting procedures in elementary and middle school.

In both the elementary and middle school datasets, students were linked to teachers through statewide course identifiers and accompanying terms in which each student was enrolled in a given course under a specified teacher. For elementary students, the terms consisted of three marking periods. For middle school students, the terms consisted of two semesters. Elementary students were required to have received marks in each of the three marking periods, and middle school students were required to have received grades in ELA courses in both semesters. Students could potentially have data records connected to multiple teachers covering varying time periods in the same course. For each of the three core content courses we then collapsed the links into a single measure of number of terms of potential content exposure.

In elementary school, in the event that a student was exposed to more than one teacher, each marking period was given equal weight in distributing teacher/student exposure. For example, if a student was enrolled in two marking periods under one teacher, then that teacher was coded as .67 for having contributed to two thirds of the students' core curriculum exposure. If the same student enrolled in the third marking period with a different teacher, then that third marking period teacher would have been coded as .33 and all other teachers in

the sample would have been coded as zero. This would then result in the student's exposure adding to a unity (1).

In middle school, students' exposure to teachers at the course level in the three core content areas was coded in the same manner as in the elementary grades, but based on the two semesters. A difference in our middle school coding process was that we did not force each core content area into equal weighting. Instead each core content area exposure contributed to a core content area total sum that formed the basis from which the weights were proportioned. Most commonly, a student had equivalent core instruction exposure in each of the three content areas (often two terms each). In that scenario, if a student had exposure to three different teachers, then each teacher would contribute one third (.33) of the overall core curriculum exposure and all other teachers in the sample would be coded as zero. However, in seventh grade the students often only had one semester of science. It was also occasionally the case that students would take both a core and an additional elective science course; in these cases, both science courses were included in the LDC analysis. As a result, there was more variability in the number of units that students accumulated in science than in the other two content areas.

The weighting in middle school was always distributed as a proportion of the total semesters across the three content areas. Therefore, if a student accumulated one science unit (one semester), two social studies units (two semesters), and two ELA units (two semesters), the base number of units would be five. Using that scenario, the science teacher would contribute one fifth (.20) of the overall core curriculum exposure with the social studies and science teachers contributing two fifths (.40) each, again resulting in the student's exposure adding to a unity. Tabular versions of the above examples can be found in Appendix G.

For this study, we modeled the treatment intervention variable as a fixed effect at the student level in two different ways. The first dosage-dependent approach takes into account the students' level of exposure to the intervention teachers. In this approach, the treatment was structured as a continuous response variable, coded as zero for comparison students and coded as a positive value for treated students, albeit never exceeding one. The positive value assigned to treated students in the dosage-dependent approach was simply the sum of the intervention teacher weights linked to the treated student. The second approach was dosage independent and classified any student exposed to an intervention teacher via at least one course as a treated individual. In this approach the treatment variable was dichotomous: coded as one for treated students and zero for comparison students. In the Cohort 2 elementary analysis, the two models are very similar because the great majority of the students were exposed to just one teacher and, as such, we only present the dosage-independent approach for that sample in Chapter 6.

As with other multilevel models, MMMC accounts for the nonindependence of observations within cluster by adjusting the inferences on parameter estimates for the correlations between responses in a cluster. This modeling approach, however, becomes

computationally cumbersome using traditional frequentist estimation methods. As recommended by Browne et al. (2001), to address this issue we employed Bayesian methods using Markov chain Monte Carlo (MCMC) techniques. Multilevel models incorporate demographic and achievement variables used in the matching design as covariates, making the findings "double robust" in that characteristics can be controlled for in both matching and outcomes analysis stages. Student demographic and baseline achievement variables that were used in the matching process were also included as covariates in the MMMC model. The full specifications for both models can be found in Appendix G.

3.0 Survey Analysis

In this chapter we present the survey results. First, we summarize teachers' responses. We then summarize the teacher leaders' responses, followed by the administrators' responses.[2] Whenever we felt a comment from an open-ended response might clarify, illustrate, or corroborate a finding, we included that comment in the appropriate section. Within each of these sections, we organize results by the following domains: LDC participation; professional learning community and teacher collaboration; LDC training and support; LDC module implementation; leadership support; impact; and issues of scale-up and sustainability and facilitators and barriers. The last section summarizes the results about program efficacy and improvement, which were completed by all three participant types. We end with a summary of results.

As previously noted, we use acronyms to identify which participants answered specific questions for each domain. We preface teacher items with "T," teacher leader with "TL," and administrator questions with "A." For example, LDC Participation (T1–4) indicates that teacher survey items 1–4 are used to provide information on LDC participation. Survey questions and descriptive results are presented in full in Appendix A for teachers, Appendix B for teacher leaders, and Appendix C for administrators.

3.1 Teacher Survey Results

As noted earlier, 245 teachers spanning 43 schools completed the survey.[3] Among the teachers who completed a survey, the largest proportion taught an elementary school grade while the smallest proportion taught at the high school level. More specifically, 63% of teachers taught in 28 elementary schools, 6% in two K–8 schools, 23% in 11 middle schools, 5% in one grade 6–12 school, and 3% in one high school (see Table 3.1). When examining participation by cohort, 45 (18%) were Cohort 1 returning teachers, 30 (12%) were Cohort 1 new teachers, and 171 (70%) were new teachers in Cohort 2 schools.

In addition to producing descriptive statistics on the overall sample, we also analyzed results separately for elementary and secondary level teachers and by cohort. We highlight important differences between these subgroups, when they are apparent. However, because of the overlap in membership within the categories, the observed differences must be treated with caution. That is, cohort differences were confounded with elementary versus secondary comparisons given that Cohort 2 schools were largely at the elementary level during the 2017–2018 school year. Cohort 1 versus Cohort 2 comparisons also are complicated by the presence of a substantial number of Cohort 1 new teachers, whose schools are in their second year of implementation but who personally are in their first year of implementation. Further,

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[2]As noted earlier, some of the teacher leaders were also classroom teachers, coaches, or coordinators. Because of this, some teacher leaders were represented in both the teacher leader and classroom teacher samples.

[3]One additional teacher started the survey, but did not complete it. This teacher is not included in the analysis.

these teachers were sometimes joining PLCs that started in 2016–2017 and sometimes in completely reconstituted PLCs in returning schools. Please keep these confounds in mind when interpreting results which highlight differences between subgroups.

Table 3.1

Number of Schools and Teachers Completing the Survey in 2017–2018

School type	Schools	Cohort 1 returning teachers	Cohort 1 new teachers	Cohort 2 teachers	Total teachers
Elementary schools	28	24	20	110	154
K–8 schools	2	0	0	15	15
Middle schools	11	19	5	34	58
6–12 schools	1	0	0	12	12
High schools	1	2	5	0	7
Total	**43**	**45**	**30**	**171**	**245**
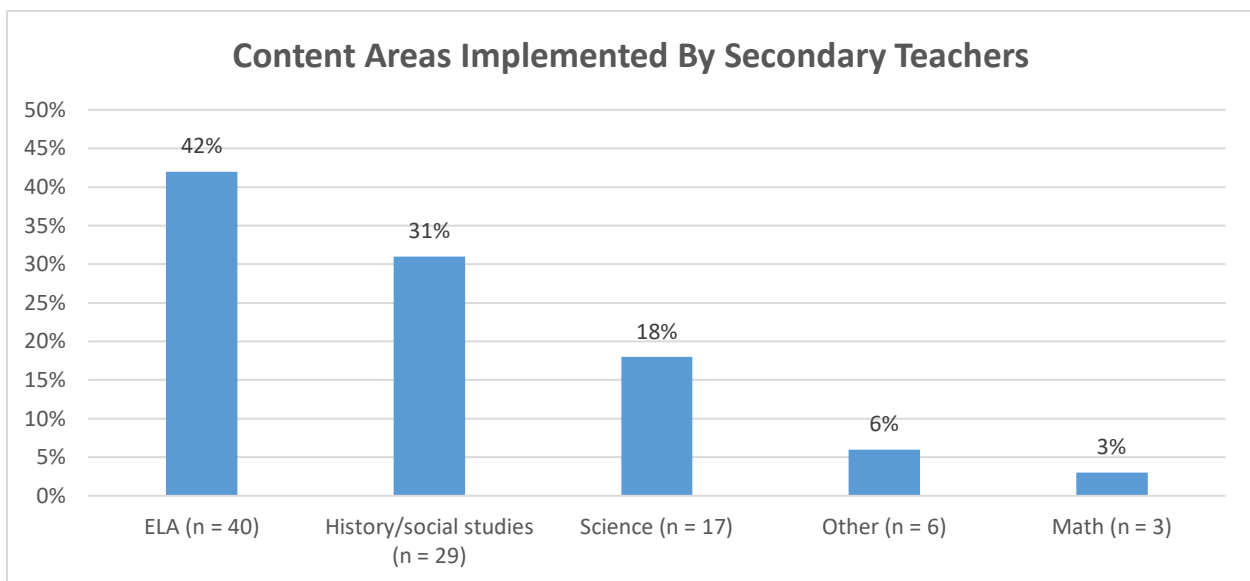
Figure 3.1. Secondary teachers' content areas implemented.

Among the 245 teachers who completed the survey, 154 reported teaching in an elementary school, and 91 teaching in a secondary school. The secondary teachers reported teaching one to seven classes (M = 4.6). In these classes, they used LDC materials in zero to seven classes (M = 2.7).[4] As shown in Figure 3.1, the distribution of LDC across content areas

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[4]One teacher reported not using LDC materials in any classes.

was 42% in ELA, 31% in history/social studies, 18% in science, 6% in other areas (e.g., health, Spanish), and 3% in mathematics.

LDC participation (T1–4). Three fourths of responding teachers (75%) reported that 2017–2018 was their first experience with LDC. While the remaining 61 teachers (25%), who were in their second year of implementing LDC, reported teaching approximately two modules in 2016–2017 (M = 1.7), there was a wide range of variation in the numbers reported by respondents (0–10 modules). These teachers also reported teaching an average of two mini-tasks outside of the modules in the prior year, with a range of 0–10.

Professional learning community and teacher collaboration (T5–9, T31, T38). Almost all teachers (96%) participated in a PLC focused at least partly on implementing LDC. The eight teachers who had not participated in a PLC reported they had used LDC tools in their planning or instruction. All eight of these teachers used CoreTools to access modules; four used CoreTools to design modules; two took online LDC courses; and two were given modules by other teachers. We hypothesize that given their engagement, these teachers may have partially participated in the PLC, perhaps by initially attending meetings and later dropping out.

The majority of teachers (64%) met with their PLCs every other week. A small percentage (12%) reported meeting weekly, and nearly a quarter (25%) reported meeting once a month or less. The most common reason cited for not meeting weekly was that PLC members had other priorities (54%) and a relative few indicated a lack of protected PLC time (18%). Other less frequently cited reasons were limited interest in attending meetings (11%); not a priority of the administration (10%); lack of participating teachers (8%); and not enough support from the teacher leader (3%).

The vast majority of teachers reported that LDC PLC meetings lasted 45 minutes or more. In addition, 57% reported meetings of 45 minutes to an hour and over a third of teachers (36%) reported that meetings lasted longer than an hour. Only 5% of respondents reported meetings of less than 45 minutes. About two thirds of the teachers (66%) agreed or strongly agreed that their PLCs were given sufficient time to meet. However, in their open-ended responses, 67 teachers (32% of 194 teacher commenters) indicated that time was a barrier to effective implementation. These comments included additional time issues, such as regularity of meetings and the need for teachers to have time outside of regular formal meetings to discuss and implement LDC.

Beyond formal PLC meetings, almost half of teachers (46%) said they had informal discussions about LDC with their colleagues once a week or more. In addition, 23% of teachers reported having informal discussions every other week, 18% once a month, and 13% less than once a month.

Teachers also were positive about the effects of their PLC participation on their collaboration with other teachers. Over three quarters (79%) of teachers agreed or strongly agreed that after participating in LDC they were more likely to collaborate with other teachers

on designing instruction. Almost three quarters (74%) reported that participating in LDC helped them develop working relationships with teachers in different grades or subjects. In addition, half of teachers (51%) reported sharing their LDC work with colleagues who were not officially in LDC.

LDC training and support (T10–T13). Teachers were asked to evaluate the three primary types of training and support offered by LDC: their professional learning community (PLC), online course materials, and virtual coach support during and outside of PLCs.

Teachers found PLCs to be moderately or very effective in multiple ways. As shown in Figure 3.2, these include creating an environment in which teachers were comfortable working with each other (94%); fostering an environment where teachers shared instructional plans with colleagues (87%); allowing space for shared problem solving (83%); and helping teachers learn to develop modules (79%). Cohort 1 new teachers were slightly less likely to report that their PLC was effective.

EFFECTIVENESS OF TEACHER'S PLC

	Not effective/A little effective	Moderately effective/Very effective
Creating an environment in which teachers were comfortable working together.	6%	94%
Fostering an environment where teachers shared their instructional plans with colleagues.	13%	87%
Allowing space to share student work.	17%	83%
Helping teachers to improve their LDC instructional plans.	21%	79%

Figure 3.2. The effectiveness of teacher's PLC (*n* = 236).

The majority of teachers also reported satisfaction with many aspects of the online course materials by rating them as good or excellent. As shown in Table 3.2, aspects that were endorsed by at least half of the teachers included clarity of information (77%); relevance of information (75%); usefulness of resource documents such as the LDC Pitfall Checklist (73%); opportunity to extend learning (69%); helpfulness in creating modules (68%); ease of use (54%); and usefulness of videos (52%). Cohort 1 new teachers appeared less positive about the usefulness of resources (64%), the relevance of the information provided (59%), and their helpfulness in creating and/or adapting modules (55%).

Table 3.2

Rating Online Course Materials (n = 236)

How would you rate each of the following aspects of the online course material (in the Learn tab in LDC CoreTools) that your coach used or directed you to use?	Poor	Fair	Good	Excellent
Clarity of information presented	3%	20%	58%	19%
Relevance of information presented	1%	23%	49%	26%
Ease of use	9%	37%	42%	12%
Usefulness of resource documents (e.g., LDC Pitfall Checklist, CCSS Mental Markers, etc.)	6%	20%	53%	20%
Usefulness of videos	17%	31%	40%	12%
Degree to which course material helped me to create and/or adapt LDC modules	4%	29%	49%	19%
Opportunity to extend learning when needed or desired	5%	26%	47%	22%

Teachers were also asked to report about the feedback they received. Most teachers (96%) felt they were able to get the feedback and support they needed from their LDC coach and reported that coaches provided written feedback in a timely manner. In addition, at least half the teachers found the following types of asynchronous coaching to be moderately helpful or very helpful: individual Zoom conference (68%; 22% did not use); written feedback in CoreTools (60%; 21% did not use); and email or phone communication (56%; 32% did not use). In general, Cohort 1 returning teachers found the asynchronous coach supports more helpful than the other two teacher cohorts. Seventy-three percent of Cohort 1 returning teachers found written feedback to be moderately or very helpful, compared to 60% of Cohort 2 teachers and 42% of Cohort 1 new teachers. New teachers in Cohort 1 again tended to be less positive than other teachers in their perceptions of the helpfulness of written feedback (42%) or of email or phone communication (48%).

LDC implementation (T14–29). This domain covers questions on module creation (T14–17), module peer review (T27–29), and classroom implementation (T18–26).

Module creation (T14–17) and module peer review (T27–29). Teachers adapted or created two types of LDC instructional products. The mini-tasks are short, generally take one class period, and focus on a specific skill. In contrast, modules are longer, more complex units composed of a series of mini-tasks, which build to a culminating *teaching task*, and include a culminating writing assignment.

Using existing LDC templates and exemplars, teachers individually or collaboratively adapted zero to four modules during the year. Among the 196 teachers who answered this question, most (82%) adapted at least two modules. More specifically, 129 teachers (66%)

adapted two modules, 25 teachers (13%) adapted three, and five teachers (3%) adapted four modules. In contrast, nine teachers (5%) adapted no modules and 28 teachers (14%) adapted one. The mean number of modules that teachers adapted was 1.9.

Teachers also reported individually or collaboratively creating between zero and 12 modules from scratch. The majority of teachers (105 or 54%) constructed no original modules, 50 teachers (26%) created one, 37 teachers (19%) created two, three teachers (2%) created three, and one teacher (1%) reported creating 12. The mean number of modules that teachers created from scratch was 0.7.

Teachers also reported how they constructed modules. Most teachers (63%) worked in teams of two or more to create modules. A quarter (25%) created modules individually, with most of the teachers who did this (41%) teaching at the secondary level. A relative few (18%) collaborated with the entire PLC to write modules.

Less than one third of the teachers (29%) reported attending a Peer Review/Curriculum Alignment Workshop during the 2017–2018 school year. Of the 68 teachers who did attend, the majority were elementary teachers (53 or 79%). Similarly, a minority of teachers submitted their modules for LDC National Peer Review, which was to be expected given the preponderance of teachers were new to LDC during the 2017–2018 school year. Of the 66 teachers who reported submitting modules for peer review, 11 (17%) found the process very helpful, 25 (38%) moderately helpful, 18 (27%) a little helpful, and 12 (18%) not helpful.

When asked to reflect on the instructional strengths of their modules, most teachers expressed confidence in their ability to execute all nine of the features of LDC modules that were listed (see Table 3.3). More specifically, teachers expressed high confidence in their ability to select focus standards and to create a standards-driven writing assignment (92% and 91%, respectively). Almost all teachers also felt confident about their ability to make a writing assignment relevant and engaging (86%), to identify the skills needed to complete a writing assignment (86%), and to select texts and other materials that support deeper learning (81%).

There were some differences by cohort in these ratings of LDC instructional features. Cohort 1 new teachers felt less positive in their ability to execute LDC instructional features than the other two teacher groups. For example, Cohort 1 new teachers appeared a little less confident in their ability to assess the quality of student writing (59%) or create writing assignments that were relevant and engaging for students (76%).

Table 3.3

Rating on Teacher Skills Associated with Creating LDC Modules (n = 236)

Please indicate to what extent you were able to do each of the following when creating LDC modules.	Not at all	A little bit	A moderate extent	A great extent
Select focus standards for a writing assignment	1%	6%	34%	58%
Create a standards-driven writing assignment	2%	6%	36%	55%
Select high quality, complex texts and other materials that allowed students to engage in deeper learning	3%	16%	47%	34%
Identify the skills students need to develop to complete a writing assignment	3%	12%	42%	44%
Create daily lessons to teach the skills a student needs to complete a writing assignment	8%	19%	46%	27%
Differentiate instruction by incorporating multiple ways of thinking, various levels of complexity, and multiple modalities	6%	22%	47%	25%
Plan for a variety of methods to assess student progress (e.g., rubrics and/or mini-task scoring guides)	8%	21%	46%	25%
Assess the quality of writing assignments and/or instructional plans using Peer Review/Curriculum Alignment Rubric (e.g. Task Pitfalls Checklist, rubric indicators)	6%	21%	42%	31%
Make a writing assignment relevant and engaging for students	4%	10%	46%	40%

Classroom implementation (T18–26). Toward the beginning of the year, teachers were asked to *Find and Teach* a module from the CoreTools Library. The majority of teachers (77%) reported that they did this activity. Of those teachers, 80% reported making adjustments to the modules they found to adapt them to their classroom needs.

After implementing the Find and Teach module, teachers were also asked to adapt, refine, and/or develop another module. The majority of teachers adapted and refined an existing module in the LDC Library (173, 73%) while the remainder (63, 27%) created a module from a template in CoreTools. Almost all teachers (93%) reported teaching these modules by the time they completed this survey, with seven (3%) reporting that they planned to teach the module before the end of the current school year, six (3%) planning to teach it during the next school year, and four teachers (2%) stating that they did not have any plans to teach the module.

After creating or adapting modules, teachers implemented them in their classrooms and reflected on their success. Teachers reported implementing zero to 20 modules (M = 2.2), as well as from zero to 20 mini-tasks (M = 4.1) that were not part of modules. Most teachers (213, 90%) reported implementing at least the recommended two modules over the course of the school year. See Table 3.4 for more information.

Table 3.4

Number of Modules and Mini-Tasks Implemented (n = 236)

Modules or mini-tasks implemented in 2017–2018	Teachers implementing modules	Teachers implementing mini-tasks
0	4	54
1	19	30
2	170	37
3	31	25
4	10	14
5	1	14
6	0	17
7	0	2
8	0	8
10	0	15
12	0	8
15	0	2
18	0	1
20	1	9

Teachers reflected on various dimensions of their module implementation and the majority were positive about all aspects. Based on teacher reports, 87% felt that they engaged students in accessing complex text to a moderate or great extent; 87% were able to find evidence of student performance on targeted standards in student work; 84% engaged students in understanding the assignment and the rubric for evaluating student work; 81% used evidence of learning to modify instruction; 79% felt they provided feedback to students using assignment rubrics; and 79% systematically collected information about student learning. In addition, across all six dimensions, between 31% and 43% of the teachers reported that they were able to accomplish the activity to a great extent.

Few substantial differences emerged between teachers by school level or cohort. A notable exception was in using evidence of student progress to modify subsequent instruction with Cohort 1 new teachers being less positive (69%) than other cohort groups (80–89% positive).

Leadership support (T33–37). This domain covers questions on teacher leader support (T33), administrator support (T34–36), and teacher leadership role in LDC (T37).

Teacher leader support (T33). Teacher leaders were school staff who provided logistical support to the PLCs. Responses indicated that the vast majority of teachers were satisfied or very satisfied with the level of teacher leader support. Based on the results, teacher leaders effectively supported the PLC meetings (96%); were approachable (96%); effectively invited teachers to join LDC (90%); helped teachers align LDC to broader school goals (90%); and gave useful feedback (89%).

School administrator support (T34–36). School administrators were principals, assistant principals, or other instructional leaders who observed teachers in action and provided other leadership, such as protecting time for PLCs to meet. Teachers provided feedback about the support they received from their school administrator.

The involvement of school administrators, as reported by teachers, was varied. A third of teachers (33%) reported that their administrator attended more than three fourths of PLC meetings and a similar percentage reported that their administrator attended less than one fourth of the meetings. Finally, 14% of teachers reported that their administrators attended PLCs about half the time. Secondary teachers reported greater administrator participation than did elementary teachers.

Half of the teachers (50%) reported never being observed by an administrator while teaching an LDC mini-task. Despite this, a higher percentage of elementary teachers (55%) than secondary teachers (41%) reported having no administrator observations. About one fourth (24%) reported being observed once by their administrator; 14% were observed twice; and the remaining 11% were observed three or more times. Overall, secondary teachers reported being observed more frequently than elementary teachers.

Almost all teachers (89%) agreed or strongly agreed that their administrator encouraged LDC participation. According to teachers, about three fourths of administrators were able to allocate resources to ensure PLCs had time to meet (74%); had a firm understanding of LDC (73%); and communicated how LDC supported school initiatives and goals (72%). Most administrators reportedly also made formative assessment a priority (68%) and used LDC to implement standards-driven assignments within existing curriculum (65%). A majority of teachers also disagreed that administrators expressed concern that LDC was taking time away from other instructional priorities (63%). However, less than half reported that their administrator had provided feedback about LDC planning and instruction (45%).

Some differences were found for these questions across subgroups. First, secondary teachers were more likely than elementary teachers to rate their administrators as supportive or effective, and as having a firm understanding of LDC. Second, Cohort 2 teachers (56%) were less likely to report that their administrator expressed concern that LDC was taking time away from other instructional priorities than Cohort 1 teachers (77%). Third, Cohort 2 teachers were also more likely to agree or strongly agree that their school administrators provided feedback on LDC planning (49%) than Cohort 1 returning teachers (32%). Finally, 78% of Cohort 2 teachers agreed or strongly agreed that their school administrators used LDC to implement standards-driven assignments with existing curriculum, compared to 52% of Cohort 1 new teachers, and 50% of Cohort 1 returning teachers.

Teacher leadership role (T37). Many teachers who were not playing a formal teacher leader role as part of the LDC program nevertheless felt that LDC allowed them to exercise leadership in their schools. Most teachers agreed or strongly agreed that LDC helped them set instructional goals for LDC work at their schools (62%). About half of teachers felt they were able to affect the direction of LDC at their site by having the opportunity to discuss expansion of implementation at their school in future years (51%) and work with the teacher leader and administrator (51%). In addition, over half of teachers (52%) expressed interest in learning more about facilitating LDC implementation at their schools.

When examining results by subgroup, some differences were found. Sixty-eight percent of elementary teachers, compared to 51% of secondary teachers, agreed or strongly agreed that they were involved in setting instructional goals for LDC work at their schools, suggesting stronger buy-in at elementary versus secondary school levels. When compared to the other cohort subgroups, Cohort 1 new teachers tended to be the least positive about their involvement in LDC decision making. Sixty percent of Cohort 2 teachers agreed or strongly agreed that they were involved in discussions about how to expand LDC at their schools in future years, compared to 41% of Cohort 1 returning teachers, and 38% of Cohort 1 new teachers. Fifty-three percent of Cohort 1 returning teachers and Cohort 2 teachers agreed or strongly agreed that they had the opportunity to work with their LDC teacher leaders and administrators to shape implementation, compared to 35% of Cohort 1 new teachers. Lastly, 54% of Cohort 2 teachers and 53% of Cohort 1 returning teachers agreed or strongly agreed that they were interested in learning more about how to lead LDC implementation at their schools, compared to 38% of Cohort 1 new teachers.

LDC impact (T30–32). This domain covers questions on LDC impact on teacher practice and learning (T30–31) and student learning (T32).

Impact on teacher practice and learning (T30–31). We asked teachers about how LDC had changed their ability to practice key teacher skills. Specifically, we asked them to focus on the change from the beginning to the end of the current school year's work with LDC. We also asked them to provide information about the impact of LDC on their instructional practice.

Across all seven items asking about LDC-related pedagogical changes during the year, the majority of teachers rated themselves as having improved moderately or a great deal. Specifically, teachers perceived improvement in instructional planning by selecting focus standards (84%); identifying skills that students needed to complete an assignment (81%); creating standards-driven assignments (81%); using evidence of student learning to modify instruction (77%); creating daily lessons to teach the skills students needed (76%); collecting information on students' progress (75%); and identifying patterns of student understandings and misconceptions (75%).

Figure 3.3 reports data on other areas of teacher impact. The areas of widest reported LDC impact on teacher practice included helping teachers incorporate writing assignments into their classroom curriculum (81%); raising expectations for student writing (80%); likelihood of teacher collaboration (79%); and incorporating state standards in classroom instruction (77%). The least endorsed teacher practice involved sharing LDC work with colleagues outside of the LDC PLC (51%).

IMPACT ON TEACHER PRACTICE AND LEARNING

Statement	Disagree/Strongly disagree	Agree/Strongly agree
Participating in LDC raised my expectations for students' writing.	20%	80%
Using LDC modules became an important part of my instructional practice.	36%	65%
Implementing LDC helped me incorporate my state's College and Career-Ready Standards into my instruction.	23%	77%
LDC helped me incorporate writing assignments into my existing curriculum.	19%	81%
I am more likely to collaborate with other teachers on designing instruction after participating in our LDC…	21%	79%
LDC helped me improve on my teacher evaluation ratings.	42%	58%
Participating in LDC helped me develop working relationships with teachers in different grades and/or…	26%	74%
I shared my LDC work with colleagues outside of the LDC PLC.	49%	51%

Figure 3.3. Impact on teacher practice and learning (*n* = 236).

When examining the results by subgroup, there were limited differences by cohort and no substantial differences by grade level. Despite this a few trends can be highlighted. For

example, in general the Cohort 1 returning teachers had the highest ratings and the Cohort 1 new teachers the lowest. For LDC modules becoming an important part of teachers' instructional practice, 73% of Cohort 1 returning teachers agreed or strongly agreed compared to 64% of Cohort 2 teachers, and 55% of Cohort 1 new teachers. For teachers' sharing their LDC work with colleagues outside of the LDC PLC, 59% of Cohort 1 returning teachers agreed or strongly agreed that they did, compared to 53% of Cohort 2 teachers, and 28% of Cohort 1 new teachers.

Impact on student learning (T32). Teachers were asked to evaluate the effect of LDC on student learning (see Table 3.5). On average, three fourths or more of the teachers agreed or strongly agreed that LDC impacted student learning in the following ways: supported students to complete writing assignments (82%); increased content knowledge (79%); improved quality of writing skills (77%); and increased student capacity to analyze components of the writing task (77%). The least endorsed areas of student impact included developing speaking and listening skills and reading skills (69%, respectively).

Table 3.5

Impact on Student Learning (n = 236)

Please indicate to what extent LDC had a positive effect on students in the following areas.	Strongly disagree	Disagree	Agree	Strongly agree
Reading skills	9%	22%	47%	23%
Content knowledge	5%	16%	40%	39%
Ability to complete writing assignments	5%	14%	44%	36%
Quality of students' writing	6%	17%	43%	34%
College and career readiness	9%	19%	43%	29%
Capacity to analyze and understand the components of a writing assignment	6%	17%	43%	34%
Speaking and listening skills	10%	22%	48%	20%
Overall literacy performance	7%	19%	49%	25%
Performance on assessments throughout the school year	9%	21%	50%	20%

When examining the results by subgroup, some cohort differences emerged. For example, Cohort 1 new teachers again appeared as the least positive and Cohort 1 returning teachers (those who had actually had two years of LDC experience) generally the highest. Some cohort differences to note for the following effects on student learning (*moderately* to *a great deal*) include reading skills (75% Cohort 1 returning, 70% Cohort 2 teachers, and 55% Cohort 1 new);

quality of students' writing (84% Cohort 1 returning, 79% Cohort 2 teachers, and 69% Cohort 1 new); college and career ready skills (82% Cohort 1 returning, 72% Cohort 2 teachers, and 55% of Cohort 1 new); overall literacy performance (82% Cohort 1 returning, 75% Cohort 2 teachers, and 59% Cohort 1 new); and performance on assessments throughout the year (72% Cohort 2 teachers, 70% Cohort 1 returning, and 55% Cohort 1 new).

Facilitators and barriers (T38). Successful implementation of LDC depends on a number of factors. We asked teachers to weigh in on the effect of these factors on implementation (see Figure 3.4). Most teachers (87%) agreed or strongly agreed that their school had adequate technology to support teachers' use of LDC, although in open-ended responses, some teachers expressed concern about lack of technological knowledge which affected their access to CoreTools and the Zoom meetings. Almost three fourths of teachers felt adequately prepared to implement modules in the classroom (73%) and thought it was easy to find and adapt LDC mini-tasks (73%). However, most teachers (59%) found it challenging to find content-rich texts to use with LDC modules. Most teachers (66%) felt their PLC was given sufficient time to meet, although the majority of teachers cited time as a barrier in the open-ended responses.
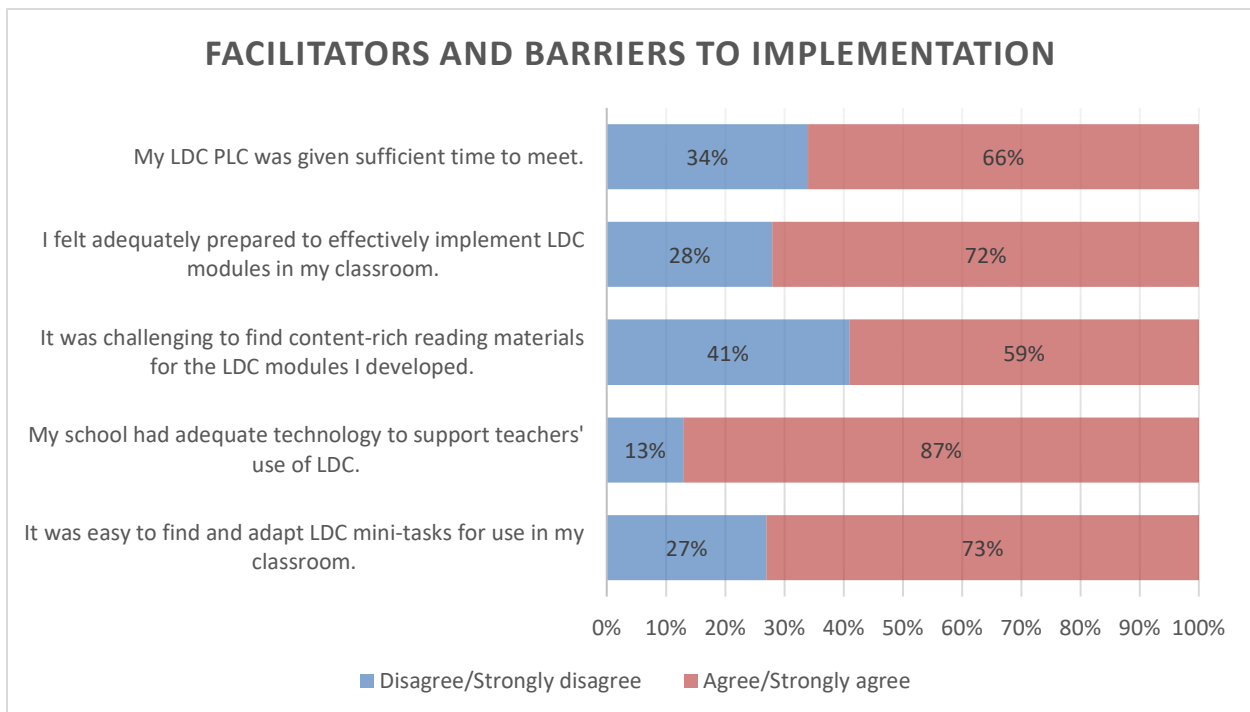
Figure 3.4. Facilitators and barriers to implementation (*n* = 236).

There were some differences by cohort but not school level in how teachers responded to facilitators and barriers in LDC implementation. In general, Cohort 1 new teachers again appeared the least positive. Although 70% of Cohort 2 teachers *agreed* or *strongly agreed* that their LDC PLC was given sufficient time to meet, Cohort 1 teachers, both returning (57%) and new (55%) were less likely to agree. Eighty-four percent of Cohort 1 returning teachers *agreed*

or *strongly agreed* that they felt adequately prepared to effectively implement LDC modules in their classrooms, compared to 79% of Cohort 2 teachers and 59% of Cohort 1 new teachers.

In terms of finding content-rich materials for the LDC modules teachers developed, most teachers found it challenging: 64% of Cohort 1 teachers, 50% of Cohort 1 returning teachers, and 48% Cohort 1 new teachers. Lastly, 91% of Cohort 1 returning teachers expressed interest or strong interest in learning more about how to lead LDC implementation at their schools, compared to 89% of Cohort 2 teachers and 72% of Cohort 1 new teachers.

3.2 Teacher Leader Survey Results

This section presents the survey results from teacher leaders. At each school, the teacher leader coordinated PLC meetings with LDC coaches. Teacher leaders were either classroom teachers or coaches/coordinators. A total of 48 teacher leaders responded to the survey.[5]

LDC participation (TL1–2). The majority of the 48 teacher leaders who responded to the survey (33, 69%) reported that they were new to LDC and did not have experience with LDC prior to the 2017–2018 school year. Of the 15 teacher leaders (31%) who had prior experience with LDC, they reported teaching between 0–7 (M = 1.7) LDC modules and between 0–10 (M = 1.7) LDC mini-tasks outside of the modules.

Professional learning community and teacher collaboration (TL3–6). Similar to teacher responses, the majority of teacher leaders (73%) reported that their PLCs met every other week. Less than a quarter (17%) of teacher leaders reported that their PLCs met once a week or more frequently. The 40 teacher leaders whose PLCs did not meet weekly reported that the primary barriers were that PLC members had other competing priorities (50%) and that PLC time was not protected (23%).

Also similar to teacher responses, 60% of teacher leaders said these meetings lasted 45 to 59 minutes. Over a third (35%) reported that meetings lasted 60 to 74 minutes. A small minority (4%) said meetings were less than 45 minutes. Nearly a third (31%) reported that they had informal discussions about LDC with teachers every other week, and over a quarter (27%) reported that they had informal meetings once a week.

LDC training and support (TL7–12). Teacher leaders evaluated the effectiveness of the various training and support methods provided during LDC implementation. These included PLC meetings, online course material, and coach support. Their responses are very similar to the overall teacher ratings.

Teacher leaders overwhelmingly reported that the PLC meetings were effective. All teacher leaders (100%) felt that the LDC PLC was *moderately* to *very effective* in creating an environment in which teachers were comfortable working with each other. Teacher leaders

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[5]Forty-eight teacher leaders started the survey, but one teacher leader stopped after item TL6. Forty-seven teacher leaders completed the full survey.

also reported that their PLC was effective in each of the following ways: fostered an environment where teachers shared instructional plans with colleagues (94%); allowed space to share student work (92%); and helped teachers learn to improve their LDC instructional plans (89%).

Online course materials used by the coaches during PLC meetings also received high ratings from the teacher leaders, slightly higher than overall teacher ratings. Most teacher leaders (85%) rated the clarity of information as *good* or *excellent*; 85% for relevance of information; 85% for helpfulness to teachers in creating modules; 83% for usefulness of resource documents; 83% for opportunity to extend learning when needed or desired; and 75% for usefulness of videos. A little over half of the teacher leaders (55%) thought that the online course materials were easy to use.

LDC coaches also were highly regarded by teacher leaders and their responses showed more frequent interaction with the coach than teacher peers. All (100%) reported that they were able to get the feedback and support they needed from LDC coaches, and 98% reported that the coaches provided written feedback on modules in a timely manner. Different types of asynchronous coach support were rated by the majority of teacher leaders as *moderately* or *very helpful*. Teacher leaders found the support, when used, helpful. These supports were email or phone communication (98% helpful; 2% did not use), individual video conferencing with coaches (96% helpful; 2% did not use), and written feedback in CoreTools (83% helpful; 13% did not use). Additionally, teacher leaders were asked about LDC coach support outside of the PLCs. All teacher leaders (100%) reported that their LDC coaches connected them with additional resources when needed. Almost all teacher leaders (98%) *agreed* or *strongly agreed* that their coach responded quickly; 96% thought their coach was easy to work with; 94% said they were able to reach their coach with questions; 94% said the coach was knowledgeable and provided high quality guidance; and only 36% of teacher leaders reported that it was challenging to structure PLC time with the coaches.

Teacher leaders had the opportunity to attend LDC professional development meetings, both in person and online (these were in addition to PLC meetings). The average number of meetings attended was 5.9, with a range of 0 to 20. With respect to LDC support outside of coaches, 89% of teacher leaders agreed that LDC offered sufficient professional development opportunities for them to lead the initiative at their schools, and 85% agreed that there was adequate technical support for CoreTools' issues.

Module creation (TL13–16). Teacher leaders reported the ways in which modules were created in their PLCs and judged the extent to which they were able to embed targeted instructional practices while creating the modules.

Teacher leaders were asked how many existing LDC modules were adapted by their PLCs. Answers ranged from 0 to 10, with a mean of 2.5. Teacher leaders were also asked how many modules their PLCs created from scratch, either individually or as a group, and they reported 0–

6 modules, with a mean of 1.0. Modules were most commonly created via a collaborative process, either by teams of two or more teachers (57%) or by the PLC as a whole (23%). Some teachers (21%) created the modules individually.

In general, teacher leaders were extremely confident in their ability to carry out targeted instructional practices while creating their modules; their responses are slightly more positive than those of general teacher participants. Almost all teacher leaders (98%) felt they were able, to a *moderate* or *great extent*, to select focus standards for the writing assignment; 98% created a standards-driven writing assignment; 92% made writing assignments relevant and engaging to students; 89% identified the skills students needed to complete the writing assignment; 89% were able to select high-quality texts and other materials; 81% differentiated and provided multiple opportunities for students to engage with the assignment; 81% assessed quality of writing assignments or instructional plans; 79% created daily lessons to teach the necessary skills; and 77% planned for a variety of ways to assess student progress.

Impact on student learning (TL17). Teacher leaders were asked to evaluate the effect of LDC on student learning and here again their responses tend to be more positive than those of teacher participants. On average, over three quarters of teacher leaders *agreed* or *strongly agreed* that LDC impacted student learning in the following ways: improved quality of writing skills (92%); supported students to complete writing assignments (89%); increased content knowledge (89%); increased student capacity to analyze components of the writing task (87%); improved overall literacy performance (83%); developed skills needed for college and career readiness (83%); increased performance on assessments throughout the year (83%); developed speaking and listening skills (79%); and developed reading skills (79%).

Alignment (TL21). Teacher leaders were asked how LDC aligned with other instructional priorities and programs at their schools. Alignment was generally perceived to be quite high as reported in Figure 3.5. Nearly all (98%) *agreed* or *strongly agreed* that LDC was a strategy for implementing statewide college and career-ready standards; 89% thought LDC helped prepare students for state assessments; 87% said LDC helped teachers create writing assignments to use within their existing curricula; 77% viewed LDC as complementing other initiatives at the school; and 60% reported their school connected LDC to specific school goals. Notably, however, about half reported that time spent on LDC interfered with other initiatives, and almost three quarters (81%) believed that it was difficult for teachers to focus on LDC because of other competing priorities at the school.

LDC ALIGNMENT

Statement	Disagree/Strongly disagree	Agree/Strongly agree
Our school connected LDC implementation to our specific schoolwide goals.	41%	60%
LDC helped teachers create writing assignments to use within their current curricula.	13%	87%
LDC complemented other initiatives taking place in my school.	23%	77%
I view LDC as a strategy for implementing my state's College and Career Ready Standards.	2%	98%
The time spent implementing LDC interfered with other important initiatives at my school.	49%	51%
LDC helped prepare students in my school for current state assessments.	11%	89%
It was difficult for teachers to focus on LDC because of other competing priorities at the school.	19%	81%
Our instructional leaders are using LDC to implement standards-driven assignments within the existing…	36%	64%

Figure 3.5. LDC alignment (*n* = 47).

Teacher leader role (TL20). Teacher leaders reflected on their leadership role in LDC implementation at their school sites. Overall, results were very positive and indicated that the majority of teacher leaders felt engaged by and invested in the LDC implementation at their school. Almost all (96%) agreed or strongly agreed that they met regularly with their LDC coach to manage the work plan; 94% felt they were able to build capacity as an instructional leader as a result of their LDC leadership role; 83% were involved in planning how to meet teacher learning needs by differentiating LDC implementation; 77% were involved in discussions about how to expand LDC implementation in future years; 70% believed their role as an LDC teacher leader helped them advocate for additional resources on their campus; 72% were involved in adjusting LDC problems of practice at their school; 68% met regularly with their school administrator; and 51% were confident that they could lead their PLC in the future without the assistance of an LDC coach.

Leadership support (TL18–19, T23). This domain covers questions on school administrator support (TL18–19) and district support (TL23).

School administrator support (TL18–19). Similar to teachers' responses, teacher leaders were asked to report on school administrators' involvement with LDC. About one third (32%)

reported that their administrators attended more than three fourths of the PLC meetings; 30% less than one fourth; 17% about half; 15% about one fourth; and 6% about three fourths.

Teacher leaders were also asked to report on the types of support that they received from their school administrator(s). A large majority of teacher leaders (89%) reported that their administrators encouraged teachers to participate; 77% reported that resources were allocated to ensure that the LDC team could meet; 75% said their administrators had a firm understanding of LDC; 72% said their administrator communicated how LDC supported other school goals and initiatives; 66% reported their administrators made formative assessment a priority at their school; 64% said administrators used LDC to implement assignments with existing curriculum; and 51% said they received feedback about their LDC planning or instruction from their administrator. Notably, only 17% of teacher leaders reported that their administrators expressed concern that LDC was taking time away from other instructional priorities, which is slightly less than that reported by teacher participants.

District support (TL23). Teacher leaders appeared slightly less positive about the district's support of LDC than were teachers. Over half of teacher leaders (53%) agreed or strongly agreed that district leaders supported implementation of LDC; 43% said that district professional development efforts aligned with LDC; 36% reported that district leaders visited their school to discuss LDC implementation; 34% agreed that district leaders were interested in implementing LDC at other schools; and 34% thought district leaders had a firm understanding of LDC.

Scale-up and sustainability (TL22). Teacher leaders were also asked their perceptions about the scale-up and sustainability of LDC implementation. As shown in Figure 3.6, more than two thirds of the respondents agreed or strongly agreed that they expected most teachers to continue with LDC the following year (70%) and felt that teachers and administrators were committed to sustaining the initiative (70%). About half felt that collaboration was taking place across subject areas and/or grade levels. Furthermore, one quarter agreed or strongly agreed that teachers who were not participating in the PLC were using LDC, and half (51%) believed that participation would increase during the next school year. Since scale-up was not a particular goal for LDC implementation and given that a majority of respondents were in Cohort 2 schools, the reports of the teacher leaders that LDC is being used outside the PLCs should be viewed as a promising trend regarding the future use of LDC.

SCALE-UP AND SUSTAINABILITY

Statement	Disagree/Strongly disagree	Agree/Strongly agree
I expect that most teachers participating in LDC this year will continue to do so next year.	30%	70%
Teachers at my school who were not part of the LDC PLC meetings used to planning process and/or LDC CoreTools.	77%	23%
As a result of LDC, new collaborations across grades and/or subjects were created or are being launched at…	49%	51%
Teachers and administrators at my school are committed to sustaining the LDC initiative.	30%	70%
I expect our LDC PLC to increase in size next year.	47%	53%

■ Disagree/Strongly disagree ■ Agree/Strongly agree

Figure 3.6. Scale-up and sustainability (*n* = 47).

3.3 Administrator Survey Results

This section presents the survey results from school principals and assistant principals.

LDC participation (A1) and professional learning community (A2). Of the 34 school administrators who responded to this survey, 24 (71%) were principals and six (18%) were assistant principals, and four (12%) responded other. The majority of administrators reported attending more than half of the LDC PLC sessions, with 21% attending less than one fourth, 18% attending about one fourth, and 27% attending about a half. Another 8% reported attending three fourths, and 27% attended more than three fourths. Overall, respondents to the administrator survey reported somewhat higher attendance than did teacher respondents. One explanation may be that given less than two thirds of administrators responded to the survey, the respondents may be a more engaged group than the population of all administrators overseeing LDC.

Training and support (A3–4). Administrators had the opportunity to attend professional development sessions, either online or in person, such as Launch Day and administrator meetings. The range of meeting attendance was between zero and 20, with an average of attendance of five meetings (*M* = 5.3).

Perceptions of LDC were overwhelmingly positive. All administrators thought their school had adequate technology to access LDC. Almost all administrators agreed or strongly agreed that LDC offered sufficient professional development for teacher leaders (97%); there were sufficient professional development opportunities for administrators (97%); that they were able

to reach LDC staff with questions (94%); and that LDC staff were able to connect them to additional resources (88%).

Classroom observation (A5–6). Administrators varied concerning the number of observations that they reported conducting during the school year. Half of respondents indicated that they observed one or two times, about one third (35%) reported observing three or more times per year, and 15% reported that they did not observe LDC implementation at all. These reports appear somewhat more positive than those from teacher surveys. Furthermore, most administrators (86%) who observed LDC instruction believed that LDC modules were moderately or very effective in developing students' literacy skills.

Impact on teacher practice (A7). The majority of administrators observed significant improvement in all areas of teacher practice probed on. More specifically, most respondents (94%) believed teachers had improved moderately or a great deal in selecting focus standards; 82% in identifying necessary skills to complete the writing assignment; 79% in creating standards-driven writing tasks; and 79% in creating daily lessons to teach skills to complete the writing task. In addition, 71% of administrators believed that teachers improved their use of evidence of student performance to shape instructional decisions; 65% in identifying patterns of student understandings or misconceptions; and 62% in collecting information on student progress in a systematic way.

Impact on student learning (A8). Administrators were positive about the effects of LDC on students. More than three fourths of respondents agreed or strongly agreed that LDC improved students' ability to complete writing assignments (82%), writing quality (79%), overall literacy performance (79%), content knowledge (79%), and understanding of the components of the writing task (79%). Most administrators also felt that LDC participation supported students' development of college and career-ready skills (71%), speaking and listening skills (71%), and reading skills (68%). Many administrators (62%) also believed that participation resulted in increased performance on assessments throughout the school year.

Administrator leadership role (A9). Almost all administrators felt they played an active role in LDC implementation. More specifically, more than three fourths of respondents agreed or strongly agreed that they allocated resources to ensure LDC team could meet (91%); made changes to school schedules to accommodate LDC PLC time (88%); and were able to shape LDC implementation at their schools (82%). Large percentages of administrators also reported that they met regularly with the LDC teacher leader (74%); led discussions about how to expand LDC implementation in future years (71%); and were involved in discussions about differentiating LDC implementation to meet teacher needs (68%).

Alignment (A10). Administrators were asked to reflect on how well LDC aligned with other school initiatives, programs, and curricula (see Figure 3.7). Respondents generally felt that LDC aligned well with their school. All administrators agreed or strongly agreed that LDC helped teachers create writing assignments to use within current curricula and it

complemented other initiatives at the school. In addition, almost all administrators indicated that they were using LDC to implement standards-driven assignments with existing curriculum (94%), they considered it a strategy for implementing state college and career-ready standards (91%), and it helped students prepare for state assessments (91%). The only areas where less than half of administrators agreed or strongly agreed involved teacher evaluation ratings (47%) and whether time spent on LDC interfered with the implementation of other school initiatives (32%).
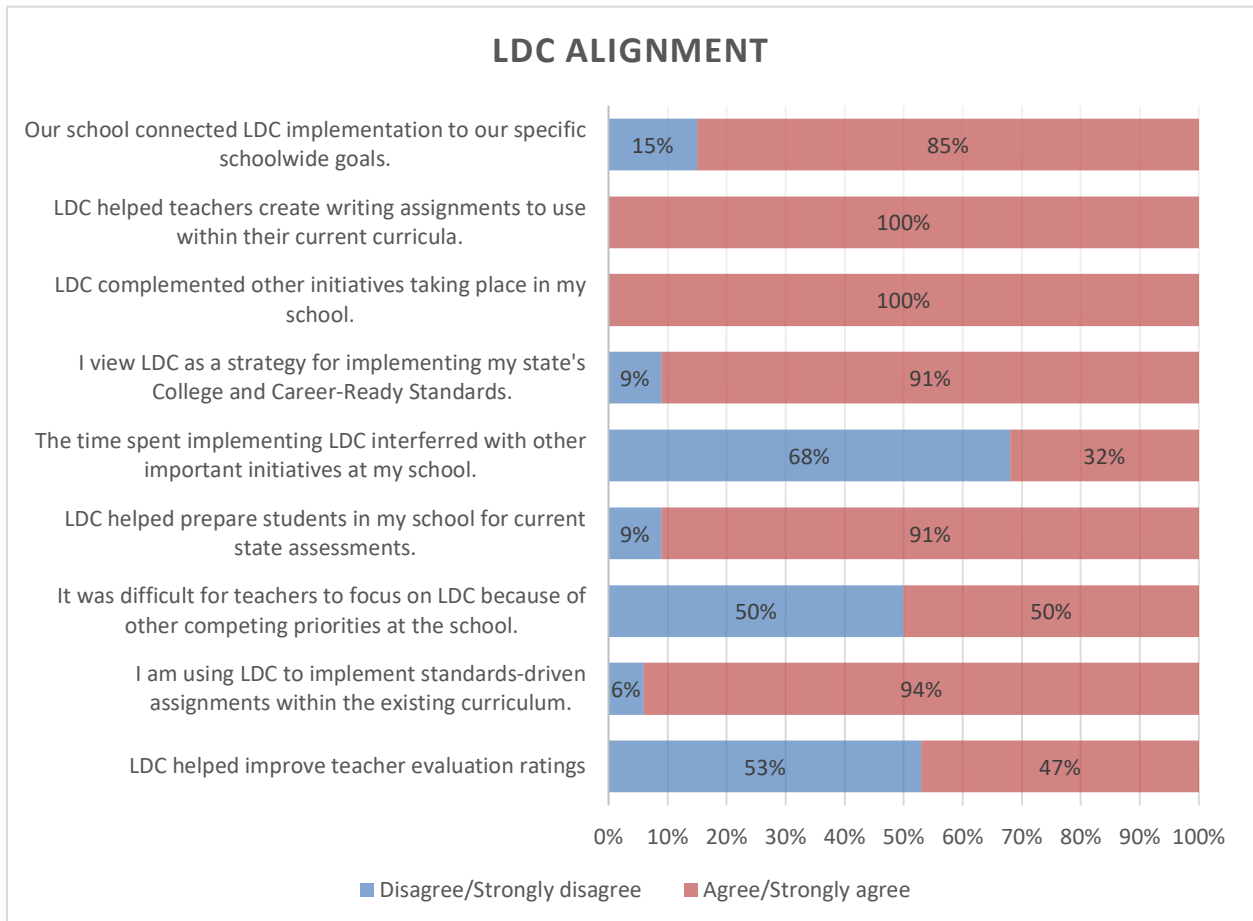
Figure 3.7. LDC alignment (*n* = 34).

Scale-up and sustainability (A11). The outlook for LDC implementation in future years was positive according to administrators. As shown in Figure 3.8, 91% of respondents indicated that teachers and administrators at their school were committed to sustaining LDC, and all felt that most teachers would continue implementing during the 2018–2019 school year. The majority of administrators also noted cross-grade and/or subject collaborations (68%) and that they expected their PLC to increase in size for the next school year. A small percentage of respondents (18%) also noted that teachers who were not currently part of the PLC were using

the LDC planning process and/or CoreTools, which might be the source of their confidence about the growth of the program for the next year.

SCALE-UP AND SUSTAINABILITY

Item	Disagree/Strongly disagree	Agree/Strongly agree
I expect that most teachers participating in LDC this year will continue to do so next year.		100%
Teachers at my school who were not part of the LDC PLC meetings used the LDC planning process and/or LDC CoreTools.	79%	18%
As a result of LDC, new collaborations across grades and/or subjects were created or are being launched at my school.	32%	68%
Teachers and administrators at my school are committed to sustaining the LDC initiative.	6%	91%
I expect our LDC PLC to increase in size next year.	38%	59%

Figure 3.8. Scale-up and sustainability *(n* = 34*)*. One respondent selected *don't know* for the second, fourth, and fifth items.

District support (A12). Administrator ratings of district support appeared less positive than did their ratings in other areas and suggest an area of need. The only two items where at least half of respondents agreed or strongly agreed involved district leader support of the implementation of LDC (65%) and alignment between district professional development efforts and LDC (50%). In contrast, only 47% of respondents reported that district leaders visited the school to discuss LDC implementation, 38% agreed that district leaders were interested in expanding LDC to other schools, and 38% thought district leaders had a firm understanding of LDC.

3.4 Open-Ended Responses for All Participants

Each survey respondent was asked for feedback in response to three questions: (a) What supports did you find the most useful and why? (b) What supports were not helpful and why? and (c) In what ways could LDC implementation be improved in your school in the future? The following section summarizes the findings for the responses to these questions from 194 teachers, 40 teacher leaders, and 34 administrators. Results for these questions are presented thematically. We begin by discussing some of the general results after which we discuss the responses related to the PLCs, virtual and then in-person coaching, and finally the CoreTools.

General views. In general, responses to the survey questions were positive. For example, 68 teachers (35%), 21 teacher leaders (53%), and 23 administrators (68%) said that everything was helpful. Furthermore, only six teachers and one teacher leader commented that no part of the intervention was helpful.

Professional learning community. Many of the survey respondents noted positive views of the LDC PLC meetings. More specifically, there were 160 positive comments, with 111 specifically noting the participants' appreciation of the virtual meetings with their LDC coaches. Respondents also appreciated the opportunity to collaborate with other teachers (29 comments) as part of their PLC.

Despite the positive views, respondents did note areas for improvement. The most common suggestion for improving implementation in the future was to provide more or protected time for LDC. Specific themes found about time (77 comments) included requests for meeting more frequently, more time and support to both plan and implement modules (not necessarily within the PLC time), to be paid for their time, and to use time more efficiently. While teachers were generally positive about the content of the PLCs, they expressed some dissatisfaction about logistical issues involving technology use, the scheduling of meetings, the pacing of meetings, and assignments, among others.

While less predominant, other suggestions were made about how to improve implementation within the PLCs. At least 17 respondents suggested an earlier start or more teacher buy-in to get the implementation off the ground at their school. Small numbers of respondents specifically requested summer training or full days of training, as opposed to an hour or two. There were also 29 comments, almost all from teachers, who felt that increased teacher buy-in was necessary in order for LDC to succeed at their sites. Ideas for accomplishing this buy-in included offering compensation, having coverage for substitutes (for planning, LDC meetings, and classroom visits), and providing additional materials.

Respondents also had some competing ideas concerning participation. For example, some teachers who were given no choice about participation felt that teacher buy-in would increase if participation was optional. This contrasts with a few administrator comments in which they stated that LDC should be a requirement and that it shouldn't be on a voluntary basis. Related to this issue of teacher buy-in, a few teacher leaders observed that PLC meetings would be more productive if teachers were committed to the program. In addition, 14 respondents suggested including more teachers, nine suggested making LDC a schoolwide program, and a few respondents suggested that all ELA teachers be included or that there should be separate PLCs for the different grade levels rather than cross-grade PLCs.

Coach (virtual). LDC coaches were frequently mentioned, with 111 comments that coaches were one of the most useful supports available and 28 comments that the coaches were not helpful. These included comments about Zoom videoconference meetings with the

entire PLC, individual Zoom meetings with coaches, email contact, and written feedback via CoreTools.

Positive comments covered a range of supports. Respondents praised coaches' feedback and guidance in navigating LDC website content like CoreTools, the library of modules, and the online courses. Respondents appreciated that they could ask questions and receive immediate feedback. They also appreciated one-on-one videoconferences with coaches, written feedback via CoreTools, and email.

Respondents who felt virtual coaches were not helpful cited technical problems as the most common issue. Across all groups, there were 13 mentions of technology being a problem, and one positive comment about technology. When the videoconferencing software and hardware did not function properly, participants felt there was time wasted. Other negative comments included that the virtual coaches were ineffective, with some teachers mentioning that having a virtual coach did not allow for personalized or differentiated support during the PLC meetings. A handful of respondents just felt uncomfortable with the medium. Notably, among suggestions for improvement, 29 comments were made about requesting more in-person coach visits, while only one participant requested more video conferences.

Coach (in-person). Here we report on comments about several types of in-person coaching, including virtual coaches' site visits and assistance from the district liaison and LDC liaison. A few teachers also mentioned support from teacher leaders in the context of coaching. There were 51 comments indicating that in-person coaching was one of the most useful supports, and 17 comments about how helpful teacher leaders were to teachers. There were 29 requests for more in-person coaching, with some suggesting that having a coach observe classroom implementation of LDC modules and then providing feedback and immediate debriefing would be helpful.

Whether in person or virtually, coaching was the most mentioned support in the open-ended responses. Respondents appreciated receiving feedback in any format, whether via individual Zoom conferences, during PLC conferences, via email, or in the CoreTools platform, and respondents also requested more coaching.

CoreTools. While comments were balanced, there were more positive ones (125) than negative ones or those that focused on suggestions (75). Included in this were comments about the content of the LDC library, most of which were positive. Participants who liked CoreTools mentioned the wealth of information on the site, including the rubrics and accessing mini-tasks and modules. Online courses, part of the CoreTools platform, received 15 positive mentions as well.

For those participants who struggled with CoreTools, most cited navigation issues (18), library modules not being user friendly (7), and limited content in the library modules (10). Related to this idea of limited content were 33 comments that the LDC modules in the library did not meet students' needs, either in reading level, content (e.g., elementary grades, science),

or English learner status and students with disabilities. The three most commonly cited barriers to mastering use of CoreTools were ease of use or navigation, lack of time to explore, and difficulty modifying existing modules. Related to the idea of ease of use, the most popular suggestion with 12 comments called for additional training in navigating CoreTools.

3.5 Summary of Results

This survey captured the responses of 82% of all participants in the district's second year of implementation. In addition to answering closed-ended questions, most of the respondents also provided narrative comments about aspects of the program they felt were useful as well as those that could use improvement. Generally, respondents provided positive feedback. Overall, the survey results suggest the following.

Overall findings

- Across all participant groups, survey responses showed positive attitudes toward LDC. All measures of satisfaction or improvement were rated positively by a majority of participants.

LDC training and support

- Teacher leaders were almost universally reported to be highly approachable, effective, and knowledgeable.

- LDC coaches received almost unanimous positive feedback, with 93% of teachers and 98% of teacher leaders reporting that their coaches gave them appropriate and timely feedback and support. A small number of participants submitted negative comments regarding coaches.

- While 87% of teachers agreed that their school had adequate technology to support LDC implementation, open-ended responses indicated that successfully conducting Zoom meetings was a common complaint.

Professional learning community and teacher collaboration

- Almost two thirds of teachers felt they had sufficient time to meet during professional learning community sessions and about three fourths felt that their administrators protected allocated resources to ensure that they could meet. However, the most frequently requested modification for future years was for more time during and outside of PLCs to plan modules, implement, and receive feedback about implementation, including having pay and substitute coverage.

- Almost two thirds of teachers and three fourths of teacher leaders reported meeting in their PLCs once every two weeks, the frequency expected by LDC. For teachers, the most cited barrier to meeting every week was that PLC members had other priorities that competed with LDC participation, and for teacher leaders, the most cited barrier was that PLC time was not protected.

- A little over half the teachers expressed interest in learning more about how to lead LDC implementation at their schools in the following year. The majority of teacher leaders (70%) and all administrators (100%) expected their teachers to continue with LDC the following year.

LDC implementation

- The majority of teachers (71% to 92%) reported success in nine key areas of LDC module development. Teachers were most confident in selecting focus standards, creating the writing assignment, identifying skills needed in the module, and making writing assignments relevant and engaging, and somewhat less confident in skills involving lesson planning and formative assessment.

- With regard to their classroom implementation of LDC modules, the majority of teachers reported success with all six key areas queried (79% to 87%). Teachers were most confident with engaging students in complex text, locating evidence of standards in final student work, and engaging students in understanding the assignment and rubric.

Leadership support

- Almost all teachers reported that their administrators encouraged LDC participation at the school, though only 45% of teachers reported receiving feedback from administrators about LDC and 50% reported never being observed while teaching an LDC task. Administrators' recollections about their classroom observations were more positive regarding their frequency.

Impact on teachers and students

- The majority of teachers reported improving in skills related to their own practice and learning in all seven skills listed (75% to 84%). Teachers were most likely to report impact in the following skills: selecting focus standards, creating standards-driven writing assignments, and identifying skills students need in writing assignments.

- Approximately 80% of teachers agreed that participating in LDC raised their expectations for student's writing, helped them incorporate writing assignments into their existing curriculum, and made them more likely to collaborate with other teachers on designing instruction.

- Three fourths of teachers, 83% of teacher leaders, and 79% of administrators agreed that LDC helped improve students' literacy performance. The two most highly rated areas of impact, according to all three groups, were students' ability to complete writing assignments and quality of students' writing.

Facilitators and barriers

- Most teachers found CoreTools to be helpful, but almost half of teachers reported that the website was not easy to use and that videos were not useful. The majority of teachers thought that online course materials were clear, relevant, and useful (i.e., checklists, mental markers).

This year's survey responses were consistently positive across all dimensions and participant groups. Suggestions and recommendations provided in this report were primarily about adapting to and ameliorating district constraints, such as protected time for meetings and technological limitations.

4.0 Analyses of LDC CoreTools Data

In the following section, we report on how participants interacted with LDC's CoreTools online system. We begin by presenting participation rates for key CoreTools activities, including creating a user account, viewing modules, editing modules, and commenting on modules. We then dig deeper into CoreTools viewing, editing, and commenting by sharing descriptive statistics for all i3 CoreTools users followed by results broken down by key subgroups (including LDC role, school level, cohort, and content area taught). After that we compare the level of engagement for i3 CoreTools users who completed and taught a full-length module to those users who did not complete and teach a module during the school year. Finally, we summarize results.

4.1 CoreTools Activity Participation Rates

The four key CoreTools activities we examined are creating a user account, viewing modules, editing modules, and commenting on modules a. Among the 343 CoreTools users, 282 were classroom teachers (with 43 of those individuals acting as teacher leaders), 9 were coaches or coordinators playing the teacher leader role, and 52 of them were administrators, with some individuals in each category acting as teacher leaders. As seen in Table 4.1, nearly all participants used CoreTools to at least some degree. Ninety-eight percent of all participants created a user account, 91% of participants viewed modules, and 77% edited modules. Commenting on modules was a less common activity with only 27% of all participants doing so.

Table 4.1

CoreTools Feature Participation Rates: 2017–2018 (Counts and Percentages)

Participant type	n	User account	Viewed a module	Edited a module	Commented on a module
Teacher	243	239 (98%)	235 (97%)	210 (86%)	62 (26%)
Teacher leader (classroom teacher)	43	43 (100%)	43 (100%)	42 (98%)	25 (58%)
Total teachers	**286**	**282 (99%)**	**278 (97%)**	**252 (88%)**	**87 (30%)**
Teacher leader (coach/coordinator)	9	9 (100%)	9 (100%)	8 (89%)	3 (33%)
Administrator (principals and assistant principals)	55	52 (95%)	32 (58%)	11 (20%)	5 (9%)
Total participants	**350**	**343 (98%)**	**319 (91%)**	**271 (77%)**	**95 (27%)**

Table 4.1 also displays subgroup results for participants playing different roles in the i3 implementation. These subgroups mirror the four groups to whom we administered surveys: teachers, teacher leaders who teach in the classroom, teacher leaders who are coaches and

coordinators, and administrators (principals and assistant principals). Teachers and teacher leaders had higher participation rates than the principals and assistant principals, as expected.

Nearly all participants created a CoreTools user account. Significantly, even administrators, who generally were not a part of the regular PLC meetings, overwhelmingly created user accounts. This suggests that the vast majority of administrators overseeing LDC PLCs had at least some familiarity with the online platform. Likewise, nearly all PLC teachers and teacher leaders viewed modules in CoreTools. In addition, almost two thirds of principals and assistant principals viewed modules in the platform.

We consider editing modules and mini-tasks to be the key indicator of deep engagement with the CoreTools module building platform. Eighty-eight percent of participating teachers edited at least one module or mini-task. Not surprisingly, principals and assistant principals were much less likely than teachers to edit materials in CoreTools with just one out of five doing so.

Overall, adding comments to modules was a much less common activity. A little less than one third of classroom teachers commented and only eight coaches, coordinators, or administrators did so. Commenting was not surprisingly most common among teacher leaders, whose role was most conducive to giving feedback to PLC members.

4.2 Engagement With Key CoreTools Activities

In this section, we describe participants' level of engagement with three key CoreTools activities: viewing modules, editing modules, and commenting on modules. Descriptive statistics are reported for all participants, as well as a number of subgroups. Those subgroups capture the role the individual played in LDC (teacher, teacher leader, and administrator), the level of the school at which the participant worked (elementary, K–8, middle, 6–12, or high), the cohort of schools the participant belonged to (Cohort 1 returning, Cohort 1 new, or Cohort 2), and in the case of teachers, the content area taught (elementary/multiple subjects, secondary ELA, secondary history/social studies, and secondary science). As noted earlier, some participants played multiple roles in the intervention, so the teacher and teacher leader groups overlap to some degree as they do in our survey analysis. Descriptive statistics are only reported for groups with five or more members. The samples for the viewing, editing, and commenting analyses are the 343 LDC participants with CoreTools user accounts in 2017–2018 (see Table 4.1).

Module viewing. In Table 4.2 we present descriptive statistics on how many times i3 participants viewed modules, both overall and by subgroup. We present the minimum and maximum number of views, means and standard deviations, and the sum of total views across participants. Overall, the average participant viewed modules or mini-tasks over 41 times, although the range varied greatly from zero to 276 views. There were 24 participants with user accounts who did not view any modules (about 7% of the overall sample). The standard deviation of 43.8 also shows the variability in views, suggesting that about two thirds of all

participants viewed modules between zero and 85 times, with the remaining one third viewing modules an even greater number of times.

Table 4.2

Descriptive Statistics for the Number of Times a Participant Viewed a Module in CoreTools, by Participant Subgroup

Subgroup	*n*	Min	Max	*M*	*SD*	Sum
All participants	343	0	276	41.1	43.8	14,094
Participant role						
All teachers	282	0	276	47.7	44.8	13,446
All teacher leaders	52	3	276	75.0	57.1	3,900
All administrators	52	0	29	5.9	8.1	307
Cohort						
Cohort 1 returning teachers	75	0	276	38.7	51.1	2,904
Cohort 1 new teachers	33	0	93	36.1	29.7	1,190
Cohort 2 teachers	235	0	272	42.6	43.0	10,000
School level						
Elementary school participants	210	0	272	44.7	46.3	9,383
K–8 participants	21	0	199	52.0	48.2	1,091
Middle school participants	82	0	135	32.3	29.5	2,652
6–12 participants	16	0	65	34.9	20.7	559
High school participants	14	0	276	29.2	72.7	409
Content area taught						
Elementary/multiple subjects	173	0	272	53.2	47.2	9,205
Secondary ELA	40	1	93	38.3	26.5	1,270
Secondary social studies/history	27	3	93	42.4	26.7	1,144
Secondary science	19	8	135	36.3	33.6	689

As would be expected, teacher leaders on average had the greatest number of views among the three participant roles, while administrators viewed the least number of times. There was considerable variation in viewing behavior across participant subgroups within these categories. Cohort 1 returning teachers who were in their second year of implementation, Cohort 1 new teachers who were in their first year of implementation, and participants in Cohort 2 all viewed modules at similar levels on average. Furthermore, participants in

elementary and K–8 schools viewed considerably more modules on average than their middle and high school peers.

Module editing. As shown in Table 4.3, on average participants who engaged in editing modules did so 12 times over the course of the school year. There was a wide range of engagement from editing zero times to making 136 edits to modules and mini-tasks. Seventy-two participants with CoreTools user accounts (21%) did not do any editing of modules. Two thirds of participants edited between zero and 28 times.

Table 4.3

Descriptive Statistics for the Number of Times a Participant Edited a Module in CoreTools, by Participant Subgroup

Subgroup	*n*	Min	Max	*M*	*SD*	Sum
All participants	343	0	136	12.4	16.1	4,235
Participant role						
All teachers	282	0	136	14.3	16.8	4,041
All teacher leaders	52	0	136	29.0	25.5	1,507
All administrators	52	0	16	1.5	3.7	79
Cohort						
Cohort 1 returning teachers	75	0	136	14.1	22.4	1,055
Cohort 1 new teachers	33	0	46	7.9	9.1	262
Cohort 2 teachers	235	0	65	12.4	14.3	2,918
School level						
Elementary school participants	210	0	136	11.7	15.4	2,457
K–8 participants	21	0	65	20.8	20.3	437
Middle school participants	82	0	65	12.1	15.2	993
6–12 participants	16	0	35	12.4	10.0	198
High school participants	14	0	101	10.7	26.6	150
Content area taught						
Elementary/multiple subjects	173	0	136	14.1	16.5	2,444
Secondary ELA	40	0	65	12.4	14.9	414
Secondary social studies/history	27	0	65	17.7	17.1	477
Secondary science	19	0	65	14.0	17.4	265

As with page viewing results, teacher leaders edited more than teachers not playing a leadership role, and administrators edited much less than teachers. Cohort 1 returning teachers and Cohort 2 teachers engaged in editing at considerably higher levels on average than teachers newly joining Cohort 1 PLCs. There were no substantial differences in editing behavior across school level and content area taught.

Table 4.4

Descriptive Statistics for the Number of Times a Participant Commented on a Module in CoreTools, by Participant Subgroup

Subgroup	*n*	Min	Max	*M*	*SD*	Sum
All participants	343	0	22	0.9	2.5	21
Participant role						
All teachers	282	0	22	1.0	2.6	292
All teacher leaders	52	0	22	2.2	4.0	116
All administrators	52	0	2	0.1	0.4	6
Cohort						
Cohort 1 returning teachers	75	0	14	0.6	1.9	48
Cohort 1 new teachers	33	0	2	0.3	0.6	10
Cohort 2 teachers	235	0	22	1.1	2.7	250
School level						
Elementary school participants	210	0	8	0.7	1.5	153
K–8 participants	21	0	16	2.2	4.0	47
Middle school participants	82	0	22	1.1	3.5	85
6–12 participants	16	0	2	0.2	0.5	3
High school participants	14	0	14	1.3	3.7	18
CONTENT AREA TAUGHT						
Elementary/multiple subjects	173	0	16	1.0	2.0	179
Secondary ELA	40	0	22	1.0	3.6	39
Secondary social studies/history	27	0	20	1.2	4.0	31
Secondary science	19	0	10	0.7	2.3	14

Module commenting. Only 95 participants, representing less than one third of all participants, made at least one comment on a module. As shown in Table 4.4, while participants commented between one and 22 times, the average was only one. Across participant roles, teacher leaders had the highest level of engagement, with over two

comments on average. As with editing, participants who newly joined existing PLCs showed a lower level of engagement than returning teachers or teachers in Cohort 2 schools.

4.3 CoreTools Engagement as an Implementation Variable

To evaluate the validity of CoreTools engagement as an indicator of LDC implementation, we examined the relationship between the three CoreTools engagement measures and module implementation. As described in the next chapter, CRESST identified full-length modules that i3 teachers created and/or adapted and taught in their classrooms. While all teachers may have taught the module(s) in their classrooms, we took the presence of uploaded student work as evidence of teachers having done so. This parameter yielded a sample of 209 modules, associated with 282 LDC teachers. Figure 4.1 displays the mean number of CoreTools views, edits, and comments for the 204 participants who completed and taught full-length LDC modules and their 78 peers for whom we do not have evidence of full module implementation. As shown, teachers who completed and taught full-length LDC modules exhibited considerably more engagement with CoreTools than their peers, across all three metrics. The results suggest that participants who engage deeply with the module building platform are more likely to complete and teach LDC modules.

Mean CoreTools Views, Edits, and Comments Made by Teachers

Legend: ■ Completed and taught modules (n = 204) ■ Did not complete and teach modules (n = 78)

	Number of CoreTools views	Number of CoreTools edits	Number of CoreTools comments
Completed and taught modules	54.1	15.6	1.2
Did not complete and teach modules	31.0	11.6	0.7
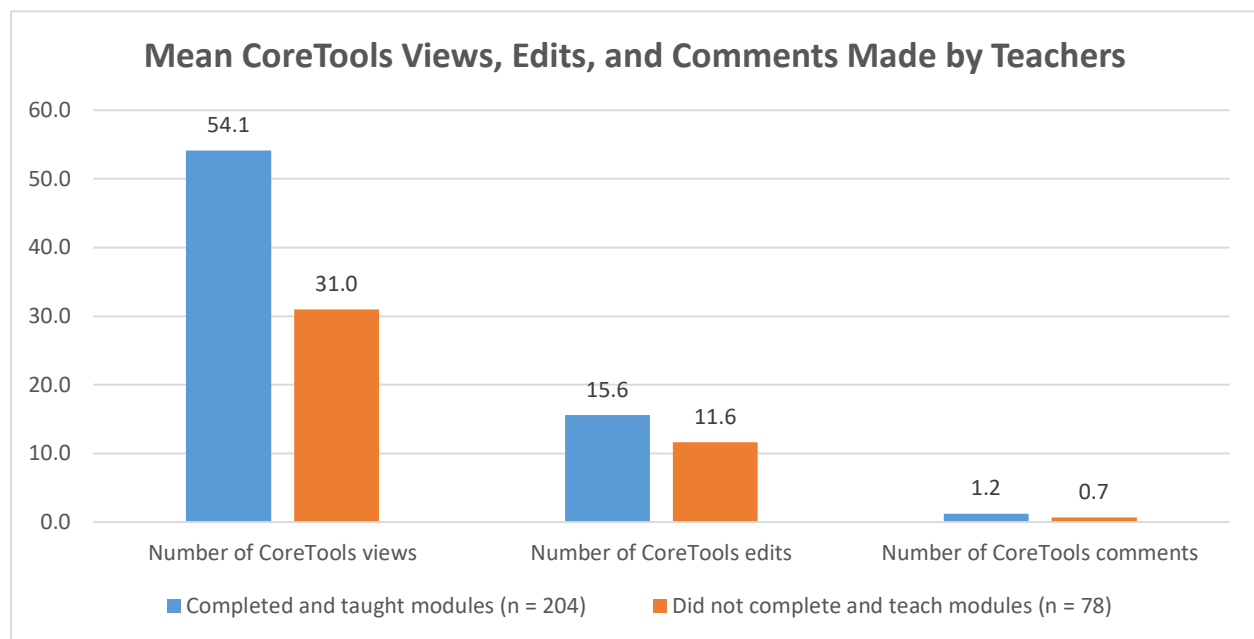
Figure 4.1. Mean number of CoreTools views, edits, and comments made by teachers who did and did not complete and teach modules.

4.4 Summary of Results

Descriptive analysis of CoreTools user behavior shows broad engagement with LDC's module building platform but the depth of that engagement varied greatly across users. Nearly all 2017–2018 LDC participants, including principals, created a CoreTools user account, and the

vast majority of teachers in PLCs viewed and edited modules. The average teacher, however, only made 14 edits to modules within CoreTools. While this might be interpreted as evidence that teachers' engagement in instructional design was somewhat limited, the CoreTools data do not provide any measures of instructional design work conducted offline by individuals or groups of teachers.

Furthermore, this descriptive analysis provides a broad rather than deep look, and does not take into account LDC expectations that teachers will do very little design work on their first module and extensive instructional design on their later modules. Teacher leaders on average engaged at higher levels than their peers not playing a leadership role in the LDC intervention. Teachers newly joining Cohort 1 School PLCs in their second year of implementation engaged at lower levels than did Cohort 1 returning teachers and teachers in the Cohort 2 schools. This finding suggests it may be challenging for teachers joining PLCs after a year to get up to speed, or perhaps that these new PLC members may be less motivated than PLC members who joined the program earlier.

5.0 Module Artifact Analysis

This section presents results for the analysis of modules submitted during the 2017–2018 school year. We first present overall results across the grade bands. This is followed by separate results for the elementary and secondary modules. Finally, we present results of an exploratory analysis examining results across time for Cohort 1 teachers who submitted modules across the last two school years, the qualitative results, and a summary of the findings. Appendix F has the generalizability theory study results.

Table 5.1 shows the overall means and standard deviations by grade band for the module artifact analysis. When examining the ratings, modules at the elementary level received higher mean ratings on all dimensions than did modules at the secondary level. More specifically, mean ratings for the elementary modules ranged from 3.92 to 4.35, indicating that on average all dimensions were moderately to sufficiently present or realized. In contrast, mean ratings for the secondary modules were all in the moderately present or realized range (3.44 to 3.77).

Furthermore, as one would hope to find, the average summary scores for the first five dimensions were similar to the overall impression ratings (Dimension 6) provided by the expert teachers. Similar results were found when examining the frequencies, with between 68% and 84% of elementary modules and between 48% and 70% of secondary modules receiving ratings of 4 or greater out of a possible 5 on six dimensions. Greater detail about the frequencies can be found in Appendix F.

Table 5.1

Means and Standard Deviations for the Modules

Dimension	Elementary (n = 106)	Secondary (n = 64)	Overall (n = 170)
Dimensions			
1. Effective writing task	4.35 (0.77)	3.45 (1.27)	4.01 (1.08)
2. Standards alignment	4.03 (0.89)	3.44 (0.96)	3.81 (0.96)
3. Fidelity to LDC instruction	4.16 (1.06)	3.64 (1.03)	3.96 (1.08)
4. Quality instructional strategies	4.09 (1.05)	3.77 (1.04)	3.97 (1.05)
5. Coherence/clarity of module	3.92 (1.03)	3.75 (1.14)	3.86 (1.07)
6. Overall impression	3.94 (1.06)	3.69 (0.89)	3.85 (1.00)
Average (Dimensions 1 to 5)	4.11 (0.78)	3.61 (0.75)	3.92 (0.80)

5.1 Analysis of Elementary Modules

The following section presents descriptive results for the elementary modules disaggregated by content area and then by i3 cohort grouping. Results from the generalizability theory modules as well as the expanded descriptive results for the elementary modules can be found in Appendix F.

Descriptive results by content area. Table 5.2 presents descriptive results for the elementary modules by content area. A few comparative observations can be made. First, when looking across the content areas, modules generally received higher ratings on the effective writing task (Dimension 1). Second, the dimensions where modules received somewhat lower means varied depending upon the content area. More specifically, means were highest for the science modules with the exception of Dimension 2, which focused on standards alignment. Furthermore, the ELA modules received the highest mean rating for Dimension 2. Third, in comparing the Dimension 6 ratings to the average for summary scores for the first five dimensions, it is apparent that the science raters were more closely calibrated in their overall impressions then were the ELA and social studies raters.

Table 5.2

Means and Standard Deviations for the Elementary Modules by Content Area

Dimension	ELA (*n* = 43)	Science (*n* = 43)	Social studies (*n* = 20)
Dimensions			
1. Effective writing task	4.19 (0.79)	4.54 (0.74)	4.30 (0.73)
2. Standards alignment	4.16 (0.69)	3.93 (1.12)	3.95 (0.69)
3. Fidelity to LDC instruction	3.86 (1.23)	4.47 (0.91)	4.05 (0.89)
4. Quality instructional strategies	3.86 (1.01)	4.56 (0.88)	3.60 (1.10)
5. Coherence/clarity of module	3.93 (1.03)	4.02 (1.12)	3.70 (0.80)
6. Overall impression	3.77 (1.13)	4.30 (0.86)	3.55 (1.10)
Average (Dimensions 1 to 5)	**4.00 (0.83)**	**4.30 (0.76)**	**3.93 (0.64)**

Finally, when examining the frequencies, science modules also tended to have the highest proportion of ratings of 4 or greater out of a possible 5 (see Appendix F). The only exceptions involved Dimension 5, with ELA and science both having 70% of modules reach this threshold, and Dimension 2 with ELA and social studies both having greater proportions (84%).

Descriptive results by cohort. Table 5.3 presents descriptive results for the elementary modules by i3 cohort grouping: Cohort 1 returning, Cohort 1 new, and Cohort 2. In this case, ratings were lowest for the modules submitted by Cohort 1 returning teachers, with means

ranging from 3.17 to 3.75 depending upon the dimension. In contrast, means were 3.99 or greater on all dimensions for the modules submitted by new Cohort 1 teachers and Cohort 2 teachers. Furthermore, in comparing the Dimension 6 ratings to the average for the first five dimensions, it is apparent that expert teachers' overall impressions were fairly aligned for the Cohort 1 new and Cohort 2 modules, but were conservative for the modules submitted by returning Cohort 1 teachers. Finally, the proportion of ratings of 4 or greater were generally lowest for Cohort 1 returning modules and highest for the Cohort 2 modules (see Appendix F). Despite this, because of the large variation in the sample sizes these results should be considered tentative.

Table 5.3

Means and Standard Deviations for the Elementary Modules by i3 Cohort Grouping

Dimension	Cohort 1 returning (n = 12)	Cohort 1 new (n = 11)	Cohort 2 (n = 83)
Dimensions			
1. Effective writing task	3.67 (0.49)	4.36 (0.92)	4.45 (0.74)
2. Standards alignment	3.75 (0.97)	4.27 (0.90)	4.04 (0.88)
3. Fidelity to LDC instruction	3.75 (1.06)	4.00 (1.61)	4.22 (0.99)
4. Quality instructional strategies	3.25 (1.14)	4.18 (1.33)	4.21 (0.95)
5. Coherence/clarity of module	3.33 (1.07)	4.09 (1.38)	3.99 (0.96)
6. Overall impression	3.17 (1.11)	4.18 (1.25)	4.02 (0.99)
Average (Dimensions 1 to 5)	3.57 (0.75)	4.18 (1.08)	4.18 (0.71)

5.2 Analysis of Secondary Modules

The following section presents descriptive results for the secondary modules disaggregated by content area and then by i3 cohort grouping. Results from the generalizability theory modules as well as the expanded descriptive results for the secondary modules can be found in Appendix F.

Descriptive results by content area. Table 5.4 presents descriptive results for the secondary modules by content area. While the subgroups are small, some general observations can still be made. For example, the mean ratings for the ELA and social studies modules were highest for Dimension 4 to Dimension 6, which assessed the quality of instructional strategies, coherence and clarity of the module, and overall quality. In contrast, the science modules received the highest ratings for Dimension 1 and Dimension 3, which measured the effective writing task and fidelity to LDC instruction. In addition, the science modules had lower means than did those for the other content areas on all dimensions except the effective writing task.

Furthermore, as one would hope to find, the average summary scores for the first five dimensions were similar to the overall impression ratings (Dimension 6) provided by the expert teachers. Finally, for the ELA and social studies modules the proportion of ratings of 4 or greater out of a possible 5 were generally greatest for Dimensions 4 through 6 (see Appendix F).

Table 5.4

Means and Standard Deviations for Secondary Modules by Content Area

Dimension	ELA (*n* = 28)	Science (*n* = 16)	Social studies (*n* = 20)
Dimensions			
1. Effective writing task	3.54 (1.20)	3.56 (0.89)	3.35 (1.63)
2. Standards alignment	3.54 (0.92)	3.25 (1.24)	3.55 (0.83)
3. Fidelity to LDC instruction	3.68 (1.22)	3.56 (1.03)	3.65 (0.75)
4. Quality instructional strategies	4.00 (1.15)	3.38 (1.09)	3.70 (0.66)
5. Coherence/clarity of module	4.11 (0.92)	3.13 (1.31)	3.75 (1.12)
6. Overall impression	3.86 (0.93)	3.31 (1.08)	3.75 (0.55)
Average (Dimensions 1 to 5)	3.77 (0.80)	3.32 (0.81)	3.61 (0.58)

Results by cohort. Table 5.5 presents descriptive results for the secondary modules by i3 cohort grouping: Cohort 1 returning, Cohort 1 new, and Cohort 2. In this case, ratings were highest for the modules submitted by new Cohort 1 participants, with means ranging from 4.00 to 4.71 depending upon the dimension. In contrast, all means were less than four for the modules submitted by Cohort 1 returning and Cohort 2 teachers. Modules in the different cohorts also had different weaknesses with means lowest for Dimension 3 for the returning Cohort 1 teachers, Dimension 5 for the new Cohort 1 teachers, and Dimension 1 for Cohort 2 teachers. Furthermore, as with the content area results, the average summary scores for the first five dimensions were similar to the overall impression ratings provided by the expert teachers. Finally, as shown in Appendix F, the proportion of ratings that were four or greater were generally highest for Dimensions 5 and 6, which measured coherence and clarity of the module and overall impression.

Table 5.5

Means and Standard Deviations for the Secondary Modules by i3 Cohort Grouping

Dimension	Cohort 1 returning (*n* = 15)	Cohort 1 new (*n* = 7)	Cohort 2 (*n* = 42)
Dimensions			
1. Effective writing task	3.67 (1.23)	4.71 (0.49)	3.21 (1.26)
2. Standards alignment	3.80 (0.94)	4.14 (0.69)	3.24 (0.96)
3. Fidelity to LDC instruction	3.40 (1.06)	4.14 (0.90)	3.64 (1.03)
4. Quality instructional strategies	3.87 (1.06)	4.14 (0.69)	3.64 (1.06)
5. Coherence/clarity of module	3.87 (1.19)	4.00 (1.83)	3.67 (1.00)
6. Overall impression	3.87 (0.83)	4.29 (0.49)	3.52 (0.92)
Average (Dimensions 1 to 5)	3.72 (0.72)	4.20 (0.55)	3.47 (0.76)

5.3 Exploratory Analysis of Modules

As previously noted, in order to examine potential growth among the Cohort 1 teachers who continued with LDC in 2017–2018 (returning teachers), ratings were compared for teachers who submitted complete modules in both the 2016—2017 and 2017—2018 school years. Table 5.6 presents descriptive results for the last complete module submitted by these teachers. Additional descriptive results for the exploratory analyses can be found in Appendix F.

Table 5.6

Means and Standard Deviations for the Exploratory Analysis of Elementary Modules

Dimension	2016—2017 (*n* = 7)	2017—2018 (*n* = 7)	Change (*n* = 14)
Dimensions			
1. Effective writing task	3.43 (1.40)	3.86 (0.38)	0.43 (1.27)
2. Standards alignment	3.00 (1.00)	4.14 (0.69)	0.43 (1.40)
3. Fidelity to LDC instruction	3.43 (1.40)	4.14 (1.07)	0.43 (1.27)
4. Quality instructional strategies	3.43 (1.40)	3.14 (1.46)	-0.71 (0.76)
5. Coherence/clarity of module	3.86 (0.90)	3.71 (1.11)	-0.43 (0.79)
6. Overall impression	3.43 (1.40)	3.14 (1.46)	-0.43 (1.13)
Average (Dimensions 1 to 5)	3.43 (1.09)	3.80 (0.80)	0.03 (0.88)

Table 5.6 presents results for the seven elementary teachers who submitted complete modules during both school years. While the sample sizes are too small to be significant, a few observations can be made. First, when looking at the two time points, mean ratings for Dimensions 1 to 3 were greater during the 2017–2018 school year while means for the remaining three dimensions were greater during the previous year. When examining the average summary scores for the first five dimensions, means were the same as for Dimension 6 at the first time point, but expert teachers seemed to provide more conservative ratings of overall impression for the second time point.

5.4 Qualitative Results

Expert raters were asked to participate in debriefings in an attempt to shed light on their ratings and suggest potential ways to improve ratings in the future. These debriefings were conducted at the end of each week of ratings. The following presents key findings concerning Dimensions 1 through 5, as well as our expert raters' overall impressions.

Dimension 1: Effective writing task. While a majority or the modules received higher ratings of 4 or 5 on this dimension, the writing task was not always realized. Modules that received lower ratings for this category tended to have a writing task that was either overly generic or too verbose for the expert rater to understand how it would be taught. In addition, the student background section was not used in a consistent manner, with some teachers using it to provide background about their students and others using this component as a script of what to say. Finally, the extension option was rarely used and tended to provide little detail.

Dimension 2: Standards alignment. Elementary teachers were more consistent than secondary teachers in their specification of standards for the modules. When providing lower ratings for this dimension, the expert raters noted the following issues. First, modules tended to have reading standards, but were less likely to have focused writing standards to support the essays being written by the students. Second, some of the adapted modules included multiple-grade standards that did not align with the grade level listed. Because of the limited backgrounds and reflections provided it was difficult for the expert raters to determine whether this was done purposefully or not. Third, some of the adapted modules included standards from states other than California.

Dimension 3: Fidelity to LDC module instruction. Expert raters noted some overarching trends regarding modules that received higher versus lower levels of fidelity. First, those modules with stronger fidelity tended to have stronger standards alignment. Second, modules that showed lower fidelity tended to be missing sufficient transition to writing standards and mini-tasks. Third, many modules included a mini-task on writing body paragraphs but failed to provide instruction on how to write introductory and closing paragraphs.

Dimension 4: Quality instructional strategies. Raters noted two trends that impacted their ratings of the instructional strategies. First, mini-tasks were not always well organized, making it difficult to determine what was being taught on a daily basis. Second, multiple issues

with student work were encountered. This included attachments that were hand written and difficult to read as well as work that appeared to be from a previous administration of the module. Expert raters also noted that it was easier to measure quality when teachers included the completed rubrics with the student work samples.

Dimension 5: Coherence and clarity of module. The expert raters found the student work to be vital to measuring the coherence and clarity of the modules. This was especially true for modules that included multiple work samples at varying levels as well as those that included pre-writing and not just final papers.

Dimension 6: Overall impressions. Feedback on the overall quality of the modules tended to mimic the ratings of coherence and clarity. Modules that received higher ratings on Dimension 5 also received higher ratings on Dimension 6. In part, this had to do with the rater's ability to discern how well the module was actually realized as evidenced in the student work samples, student background, and teacher reflection sections. In addition, modules that seemed ready to be implemented as written tended to be considered higher in overall quality.

5.5 Summary of Results

Based on the primary analyses, modules submitted by teachers during the 2017–2018 school year were more successful than those submitted during the previous two years of the study. When examining the overall samples, mean ratings were in the high 3s to mid 4s for the elementary modules and in the mid- to high 3s for the secondary modules. In addition, when looking at the proportion of ratings, the majority of modules tended to receive high ratings of 4 or 5 on the dimensions, indicating that a module was sufficiently present or realized or fully present or realized. The only exception involved Dimension 2, involving standards alignment, for the secondary sample with only 48% of modules meeting this threshold.

Modules submitted by the elementary and secondary teachers also tended to have different strengths. More specifically, elementary teachers generally performed better in how they set up the modules (Dimension 1 to Dimension 3) while the secondary teachers generally performed better in how they carried out the instruction (Dimension 4 to Dimension 6). While there were a few exceptions, when examining the descriptive results for the elementary subgroups, means for the dimensions were generally highest for the science modules and for the modules submitted by new Cohort 1 teachers or by Cohort 2 teachers. In contrast, for the secondary subgroups the means were highest for ELA and new Cohort 1 teachers. Because of the variation in sample sizes, though, this result should be considered tentative.

An exploratory analysis was also conducted to examine growth in performance for the seven Cohort 1 teachers who submitted complete modules with student work during both the 2016–2017 and 2017–2018 school years. While significance cannot be determined because of the small sample, ratings did improve across time for Dimensions 1 through 3, which focus on the foundational aspects of the modules including the effective writing task, standards alignment, and fidelity to LDC instruction.

6.0 Fidelity of Implementation Analysis

This chapter describes the results of a broad analysis of the LDC schools' fidelity of implementation to the LDC model. As part of Department of Education's requirements, UCLA CRESST and LDC collaborated to create a fidelity matrix to measure schools' fidelity of implementation across four key components of the LDC model. Within the matrix, each key component is measured via multiple indicators, with 14 indicators total across the key components. The key components, as depicted in the LDC logic model (see Figure 1.1) and described in Chapter 1 are (a) common planning time for LDC professional learning community with synchronous coach support; (b) asynchronous support from LDC coaches; (c) teacher implementation activities; and (d) leadership support.

The fidelity matrix can be found in Appendix G. The matrix outlines a process whereby fidelity scores on each indicator are computed for each school, and for the program as a whole. The matrix also produces a score for whether the program met fidelity for each of the four components. Although the process produces school-level fidelity scores for all indicators, the initial unit of implementation is either teacher, module, or school depending on the indicator. LDC and CRESST staff worked collaboratively to construct the fidelity matrix, with LDC staff setting the thresholds for adequate implementation on each indicator and at each level of implementation (teacher/module, school, and program).

Data for these 14 fidelity indicators come from four sources. Three indicators are based on data collected via CRESST's teacher survey. Data on these selected survey items are used to produce school- and program-level fidelity scores. Three indicators are based on data from the PLC Reflection Form collected by LDC, which was filled out by teacher leaders at the school level and used to capture information on both full PLC sessions and one-on-one planning and progress calls between the teacher leader and coach. Two indicators are based on LDC administrative records capturing attendance by teacher leaders and administrators at in-person meetings occurring four times per year. Finally, six indicators are based on LDC's CoreTools analytic data capturing a variety of behaviors including teachers' viewing of LDC online course content in the LEARN portion of CoreTools, editing of modules, and uploading of student work; and coaches' commenting and providing peer review on modules. This report explores and presents the overall amount of editing and commenting behavior of teacher participants in Chapter 4. Here we focus on whether participants edited key portions of the module, as well as the comments provided by coaches on modules as a measure of their asynchronous feedback.

In this chapter, we will first present the overall results on school- and program-level fidelity scores for all the indicators. We will then provide more detailed descriptive results with sections for each of the four key components and subsections for each of the 14 fidelity metrics.

6.1 School- and Program-Level Fidelity of Implementation Scores

Table 6.1 provides a summary for how LDC schools performed across the four key components and 14 indicators of fidelity of implementation. As described in detail in the fidelity matrix in Appendix G, schools were rated on 4-point scales (from 0 to 3) on each indicator. At the school level, adequate implementation was defined as a score of at least 2. For many of the indicators, the 4-point scale is based on the proportion of teachers who met a certain implementation threshold. In order for the program as a whole to meet fidelity on a particular indicator, a certain proportion of schools had to meet the school-level threshold of 2. For the indicators under Key Component 2, program-level fidelity was met if half or more of the schools met fidelity. For all of the other indicators (under Key Components 1, 3, and 4) program-level fidelity was met if three quarters of schools met fidelity.

As displayed in Figure 6.1, there was great variation across schools in their success in meeting implementation thresholds. Schools met fidelity on a range between zero and 10 indicators. On average schools met fidelity on just under five indicators. No schools met fidelity on more than 10 indicators, suggesting that even high performance schools have room for growth.

Overall, the analysis revealed that a majority of the schools were not able to meet the adequate implementation thresholds. Adequate implementation at the program level was met on just two of the 14 indicators: *Administrator Attendance at Quarterly In-Person Administrator Meetings* and *Teacher Leader Attendance at Quarterly In-Person Teacher Leader Meetings*. A majority of the schools also met the threshold for *Teacher Attendance at Weekly PLC Meetings*, although that proportion was not sufficient for the program to be labeled as having adequate implementation on that indicator. For all the other indicators, a minority of the schools met the threshold. For fidelity to be met on a key component, the fidelity matrix requires that fidelity be met on each of the indicators for that key component. As a result, the analysis for 2017–2018 concludes that fidelity was not met for the four key components.

Table 6.1

Summary Table of School- and Program-Level Fidelity Scores by Indicator in 2017–2018

Key component	Indicator	% of schools with no data	% of schools at Level 0	% of schools at Level 1	% of schools at Level 2	% of schools at Level 3	Program met fidelity?
Key Component 1: Common Planning Time for LDC Professional Learning Community With Synchronous Coach Support	Teacher attendance at weekly PLC meetings	2	40	4	16	38	No
	Amount of time spent on LDC during common planning time	0	0	62	38	0	No
	Exposure to LDC LEARN content during first instructional cycle	2	96	2	0	0	No
	Exposure to LDC LEARN content during second instructional cycle	2	98	0	0	0	No
	Perceived effectiveness of engagement in PLC on teacher competencies	4	36	16	22	22	No
Key Component 2: Asynchronous Support From LDC Coaches	Coach comments on modules	11	36	9	16	29	No
	Coach formative peer review on modules	9	80	2	2	7	No
	Teacher perception of the helpfulness of coach written feedback on modules	4	53	11	16	16	No
Key Component 3: Teacher Implementation Activities	Module editing	2	62	9	22	4	No
	Module implementation	2	78	7	4	9	No
Key Component 4: Leadership Support at Different Levels	Frequency of coach/teacher leader monthly meetings	0	31	40	20	9	No
	Administrator attendance at quarterly in-person administrator meetings	0	0	18	13	69	Yes
	Teacher leader attendance at quarterly in-person teacher leader meetings	0	0	4	22	73	Yes
	Principal mini-task observation	4	64	9	9	14	No
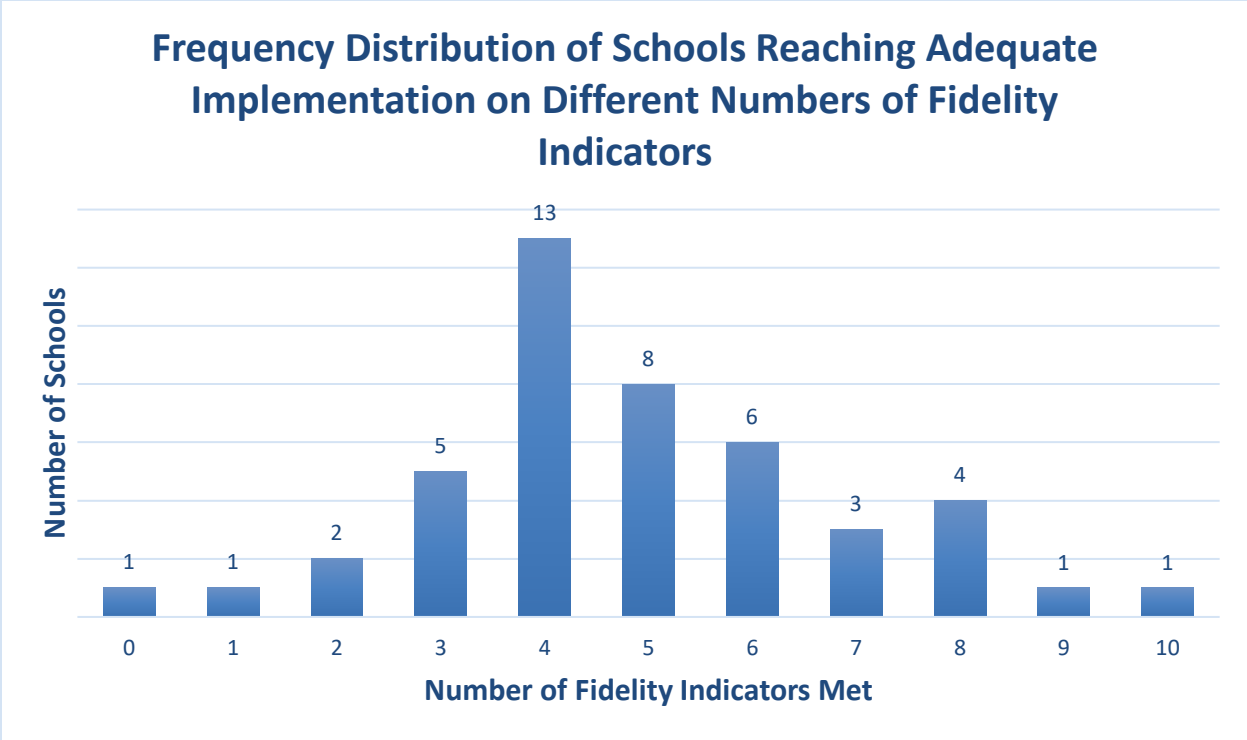
Figure 6.1. Frequency distribution of schools reaching adequate implementation on different numbers of fidelity indicators.

6.2 Key Component 1: Common Planning Time for LDC Professional Learning Community With Synchronous Coach Support

Schools varied greatly in their level of fidelity on the five indicators of Key Component 1, as shown in Figure 6.2. Schools were most successful with regard to ensuring a high teacher attendance rate at the PLC sessions, with 24 out of 45 (53%) of the schools meeting adequate implementation on *Teacher Attendance at Weekly PLC Meetings*. A substantial minority of the schools also met fidelity on *Amount of Time Spent on LDC During Common Planning Time* (38%) and *Perceived Effectiveness of Engagement in PLC on Teacher Competencies* (44%). Meeting fidelity on the indicators of exposure to LDC LEARN content was uniformly challenging for schools, with no schools reaching the adequate implementation threshold.
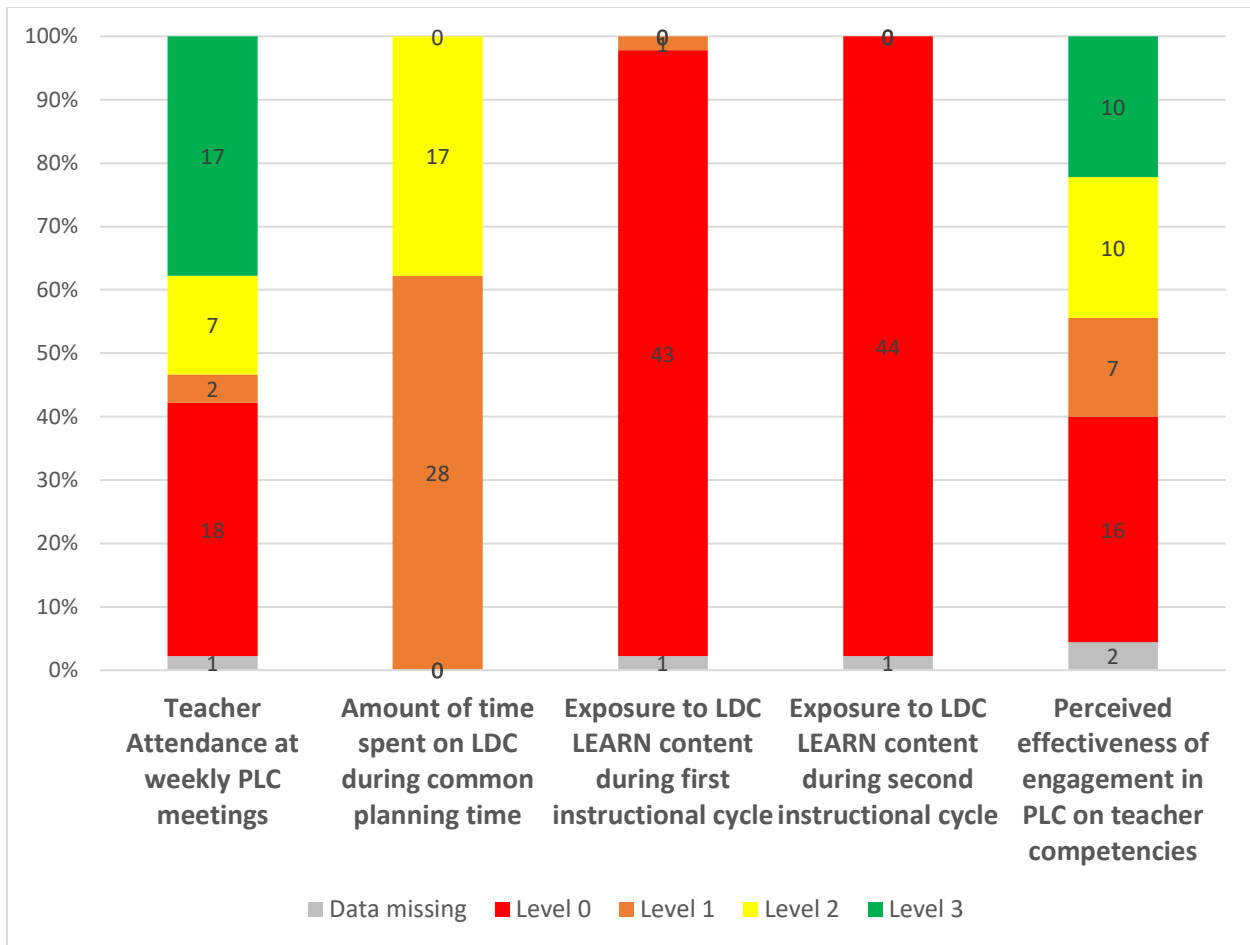
Figure 6.2. Number of schools reaching different fidelity levels for each Key Component 1 indicator.

Teacher attendance at weekly PLC meetings. PLC reflection data show that schools varied greatly in terms of the number of times their PLCs met over the course of the 2017–2018 school year. The number of sessions ranged from five to 25 times, with PLCs on average meeting 13.6 times. This is important context for the interpretation of the *Teacher Attendance at Weekly PLC Meetings* fidelity indicator. The indicator measures the proportion of teachers who regularly attended sessions but does not incorporate the number of times that the PLC met across the year. Success in the two facets of attendance does seem to be related, but there were cases where teacher attendance rates were high but the school met a below average number of times. And likewise there were cases where schools met a large number of times but individual attendance rates were poor.

Attendance rates across the full population of PLC participants varied a great deal, ranging from 0 to 100% and averaging 83%. Not surprisingly, teacher leaders in out-of-classroom assignments (*n* = 9) and teacher leaders who also taught in classrooms (*n* = 43) attended at higher average rates than teachers not playing a leadership role (*n* = 243): 88% and 92% respectively in contrast to 81%. The adequate implementation threshold for individual teacher attendance was 80% or greater, and 204 out of 295 PLC participants (69%) reached this

threshold. As seen in Figure 6.1, while a majority of teachers in a majority of schools reached this threshold, there was a very substantial minority of schools that experienced low attendance rates. More specifically, in 40% of schools less than a quarter of the teachers reached the adequate implementation threshold of an 80% attendance rate.

Amount of time spent on LDC during common planning time. This metric is based on PLC reflection data for the subset of PLC sessions that coaches joined either digitally or in person. Overall, teacher leaders reported that 35 sessions were under 45 minutes long (6%), 329 sessions were between 45 and 59 minutes (55%), 212 sessions were between 60 and 74 minutes (36%), and 21 sessions were between 75 and 90 minutes (4%).

School-level scores were based on the modal (most common) response on the PLC reflection form. For 28 of the schools, that response was 45–59 minutes, while for the other 17 schools, the most common response was 60–74 minutes. Because of the nature of the data, we cannot ascertain the exact length of the sessions. As such it is possible that many of the sessions recorded as 45–59 minutes came quite close to the desired 60 minutes of PLC time. Nevertheless, according to the thresholds set, a majority of the schools did not meet fidelity on this indicator. It may make sense for LDC to update its instrument to collect more fine-grained data on this indicator.

Exposure to LDC LEARN content during first and second instructional cycles. Here we report on the two indicators measuring PLC participants' engagement with the LEARN online course content (instructional courses that help LDC participants learn how to navigate an LDC instructional cycle). Of the 295 teachers and teacher leaders participating in LDC PLCs in 2017–2018, 139 (47%) did not view any LEARN content through their user accounts. The remaining 156 participants viewed at least one session in one instructional cycle. And a subset of that group (n = 71) viewed at least one session in a second instructional cycle. Overall the full population of teachers and teacher leaders on average were exposed to 18% of the LEARN sessions in the first instructional cycle and 9% of the LEARN sessions in the second instructional cycle.

It is possible that teachers were not complying with instructions to engage with the LEARN content within their own user accounts but were still exposed to some of the content in the group setting of the PLC. Nevertheless, even if we examine only those participants with any exposure to LDC in the first instructional cycle (n = 158), that smaller group still only was exposed to an average of 35% of the sessions. Most teachers were not being exposed to the majority of LEARN sessions in their first instructional cycle, with even lower results in the second instructional cycle.

Due to the overall low fidelity at the teacher level, none of the schools reached adequate implementation on either of the two *Exposure to LEARN Content* indicators. In fact, only one school reached the school-level score of 1 (low) by having 65% of its PLC participants meeting the adequate implementation threshold. All other schools scored zero, the lowest fidelity level.

The overall low performance of schools on this indicator, however, masks variation across the schools in performance. Most significantly, nine out of 45 of the schools (20%) had zero teachers with exposure to LEARN content via their user accounts.

Perceived effectiveness of engagement in PLC on teacher competencies. This indicator is based on the 236 teachers who provided data on Question 30 in the teacher survey (see Appendix A), which asks teachers to report how much their skills had improved in a number of areas aligned with LDC core competencies. Here we base fidelity levels on an index averaging the seven-question 30 items, which are each measured on a 1 to 4 scale. The threshold for adequate implementation at the teacher level is an index score of 3, corresponding to the survey response reporting moderate improvement in the skill area. Across the whole sample, 15 teachers had scores of 1 to less than 2 (no to a little improvement), 59 had scores of 2 to less than 3 (a little to moderate improvement), 131 had scores of 3 to less than 4 (moderate to great improvement), and 31 had scores of 4 (great deal of improvement). Just over two thirds of respondents in the sample reached the adequate implementation threshold score of 3 on the index.

There was a great deal of variation in survey responses both within and across schools. In 13 schools, half or fewer of the teachers reported a moderate effect on the competencies. On the other hand, 100% of respondents in nine schools reported a moderate or greater effect. The variation can be clearly seen in Figure 6.2. Despite many teachers reporting an impact on their competencies, a minority of schools had three quarters or more of their teachers reporting a moderate impact.

6.3 Key Component 2: Asynchronous Support From LDC Coaches

As with Key Component 1, there was a great deal of variation across schools in their level of fidelity on the three Key Component 2 indicators, as shown in Figure 6.3. Data were most likely to indicate high fidelity on the *Coach Comments on Modules* indicator, with 20 out of 45 schools (44%) reaching the adequate implementation threshold. In addition, about a third of schools met fidelity on the *Teacher Perception of the Helpfulness of Coach Written Feedback on Modules* indicator. Coach peer review was not a broadly used tool, and as a result only a handful of schools met fidelity on this indicator.
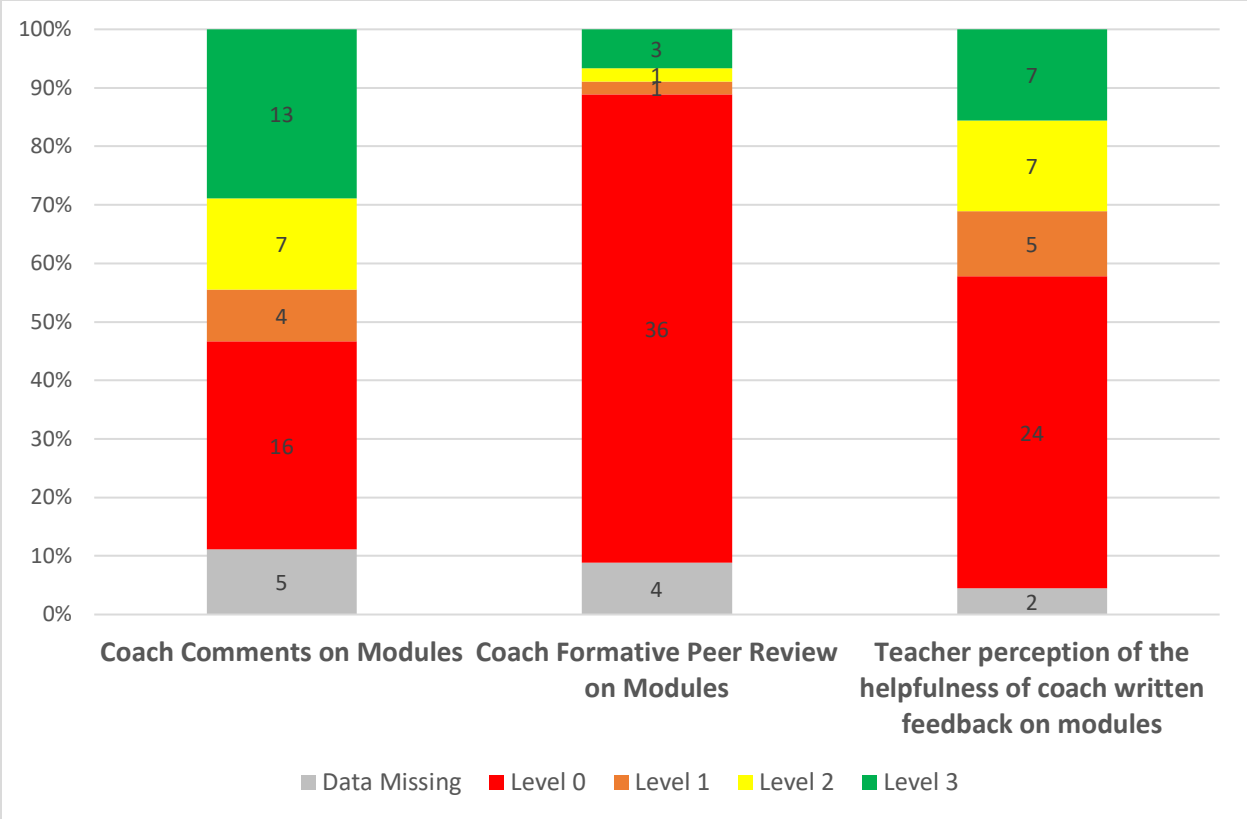
Figure 6.3. Number of schools reaching different fidelity levels for each Key Component 2 indicator.

Coach comments on modules. Results on this indicator are based on the universe of modules linked to a LEARN instructional cycle. In total there were 162 modules linked to courses across 40 of the 45 schools, with the number of linked modules per school ranging from one to nine. Those modules in turn received between zero and 13 comments from coaches. An adequate level of feedback on a linked module was defined as having received two or more coach comments, and 101 out of the total 162 modules (62%) met that threshold. The proportion of modules within schools that met the two-comment threshold varied a great deal across schools, which accounts for the variation in school-level fidelity scores as seen in Figure 6.3.

Coach formative peer review on modules. Results on this indicator are based on the universe of teachers and teacher leaders who coauthored at least one linked course. That population includes 221 participants across 41 schools. At the teacher level, fidelity was defined as having received at least one peer review from a coach. Only 34 teachers received at least one peer review from their coach, and therefore less than 10% of the schools met the school-level fidelity threshold.

Teacher perception of helpfulness of coach written feedback on modules. Across 246 teacher survey respondents, 141 teachers (57%) reported using written feedback on modules and finding it moderately to very helpful. Across schools, the proportion of teachers who

reported at least moderate usefulness ranged from zero to 100% with a mean of 59% of teachers. Most schools did not meet the school-level threshold for the perceived helpfulness of written feedback.

6.4 Key Component 3: Teacher Implementation Activities

Here we report on indicators related to teachers' engagement with the process of designing and implementing LDC modules. As shown in Figure 6.4, schools were more successful in terms of meeting thresholds for the proportion of their teachers who engaged deeply in the design process by editing key portions of modules, with just over a quarter of schools meeting fidelity on this indicator. In only about one eighth of schools did three quarters or more of teachers implement two modules, as measured by the uploading of student work samples.
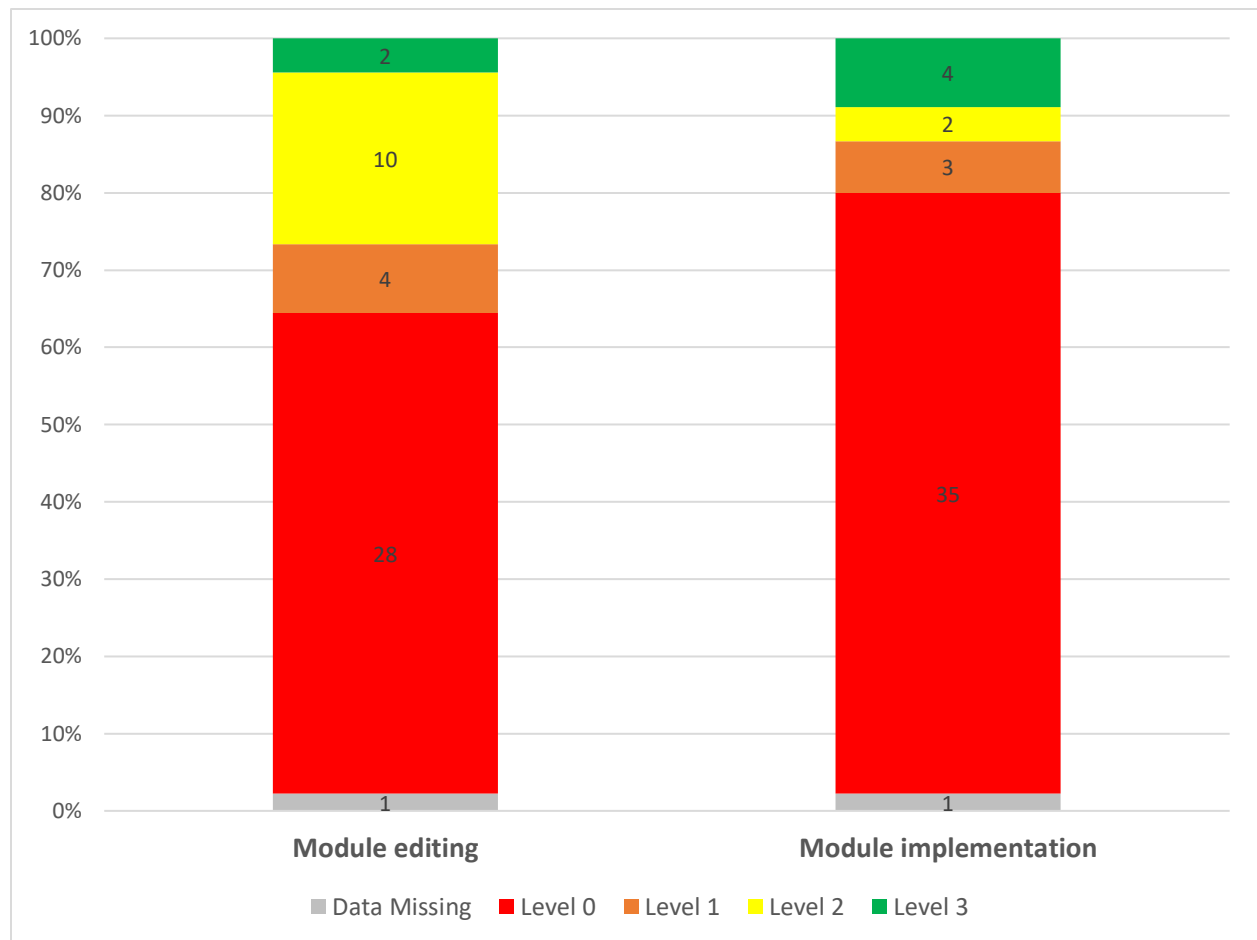
Figure 6.4. Number of schools reaching different fidelity levels for each Key Component 3 indicator.

Module editing. As outlined in the fidelity matrix, teacher-level fidelity levels are built in a stepladder fashion. To meet Fidelity Level 1, a teacher needed to edit at least one task in a module. To meet Fidelity Level 2 (adequate implementation), a teacher needed to reach the

Level 1 threshold and edit either standards or text in at least one module. To reach Fidelity Level 3, a teacher had to meet the previous requirements and also edit either skills and mini-tasks or the rubric.

A total of 150 participants (51%) failed to meet the threshold of editing the teaching task in one module and therefore implemented at a fidelity level of zero. Nine participants (3%) edited a task, but did not edit standards or texts, and therefore were at Fidelity Level 1. A total of 136 participants (46%) met the adequate implementation threshold, with 38 (13%) scoring at Level 2 (edited standards or texts but not skills/mini-tasks or rubric) and 98 (33%) scoring at Level 3 (edited standards or text AND skills/mini-tasks or rubric). As a result of less than half of participants overall meeting the teacher-level adequate implementation threshold, nearly three quarters of schools did not meet the school level threshold for adequate implementation.

Module implementation. For this indicator, our sample is the 283 classroom teachers who participated in LDC in 2017–2018 (as the metric involves classroom implementation, out-of-classroom staff are excluded). The upload of student work serves as a proxy for whether the teacher implemented a module in her classroom. The number of modules with uploaded student work ranged from zero to nine with a mean of just over one. One hundred teachers (36%) didn't upload student work to any modules. Eighty-nine (32%) uploaded student work to one module, and 73 (26%) uploaded to two modules. Twenty teachers (7%) uploaded student work to three or more modules. Overall, just one third of teachers met the adequate implementation threshold, and as a result only 13% of schools met fidelity on the indicator.

6.5 Key Component 4: Leadership Support at Different Levels

As depicted in Figure 6.5, there was a high level of fidelity with regard to attendance of administrators and teacher leaders at quarterly in-person meetings. Results, however, were considerably less positive for the other two indicators of leadership support. Most teacher leaders did not report meeting with coaches at the recommended frequency. And most teachers reported that they were not observed by principals implementing LDC instruction.
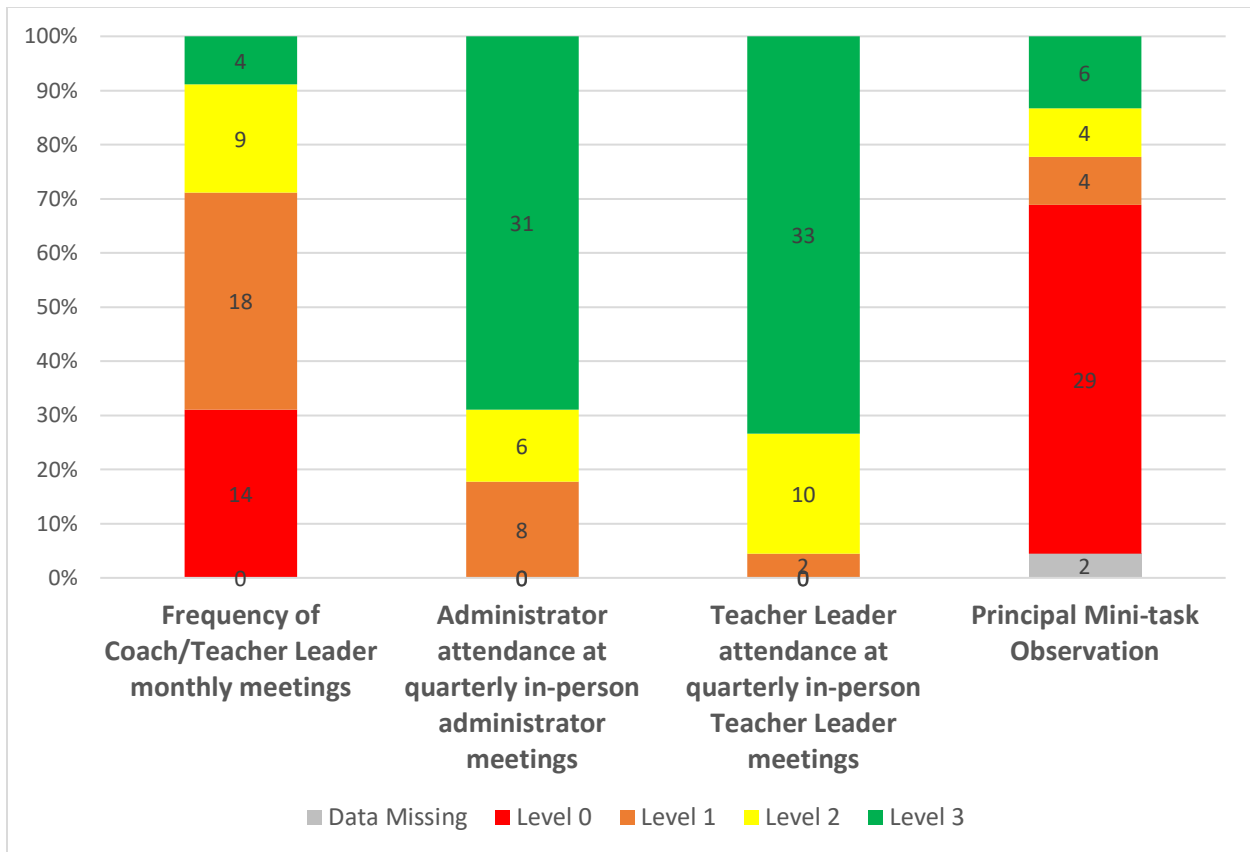
Figure 6.5. Number of schools reaching different fidelity levels for each Key Component 3 indicator.

Frequency of coach/teacher leader monthly meetings. Teacher leaders reported meeting with their coach between zero and 25 times with a mean of 6.6 times, according to PLC reflection data. The adequate implementation threshold was set at nine or more coach/teacher leader meetings across the school year, and only 13 of 45 schools (29%) met that threshold. Eighteen of 45 schools (40%) met between four and eight times (low implementation) and nearly a third met less than four times (very low implementation).

Administrator attendance at quarterly in-person administrator meetings. Administrators had the opportunity to attend four quarterly events. Administrators in 13 schools (29%) attended all four events, in 18 schools (40%) attended three events, in six schools (13%) attended two events, and in eight schools (18%) attended just one event. With the adequate implementation threshold set at two of four events, 37 out of 45 schools (82%) met the threshold.

Teacher leader attendance at quarterly in-person teacher leader meetings. Teacher leaders also had the opportunity to attend 4 quarterly events. Teacher leaders attended all four events in 20 schools (44%), attended three events in 13 schools (29%), attended two events in 10 schools (22%), and attended just one event in two schools (4%). With the adequate

implementation threshold again set at two of four events, 43 out of 45 schools (96%) met the threshold.

Principal mini-task observation. Fifty percent of teacher survey respondents reported never having been observed by an administrator when teaching an LDC mini-task, 23% reported being observed once, 13% reported being observed twice, and 11% reported being observed three or more times. With only half of all respondents reported having been observed, over two thirds of schools did not meet the adequate implementation threshold of three quarters of teachers having been observed.

6.6 Summary of Results

In summary, the fidelity matrix analysis revealed that none of the schools met fidelity requirements on the four key components in 2017–2018 in the West Coast district. The ability of PLCs to set aside common planning time that worked for all teachers varied across schools. The frequency of meetings ranged broadly, as did the attendance rates of the participants. While a majority of schools were able to maintain high attendance rates, a substantial minority did not meet the desired attendance threshold. When PLCs did meet, they most often met for between 45 and 59 minutes, although many sessions also lasted the desired 60 minutes or more. LDC intended for teachers to be exposed to key online course content within PLC time, but by and large this did not happen. Many participants did not view any LEARN content in their user accounts (although they may have been exposed to the content via a peer or coach's account), and those that did tended to view a minority of sessions in the instructional cycle. The evidence suggests that many participants did not embark on a second instructional cycle. Given the wide variety of experiences that schools and teachers had with common planning time, it is not surprising that teachers reported a variety of attitudes with regard to the effectiveness of PLC in building teacher skills.

The results also reveal gaps related to asynchronous support form coaches. Coaches seemed to use the comments function to a great degree more than the peer review function. Nevertheless, expectations with regard to coach comments on modules linked to courses were not met. Many teachers did not find feedback helpful, and the results on other indicators suggest this result may be due in part to the lack of a sufficient amount of feedback.

Results on module editing suggest that many teachers were not heavily engaged in the design process, with half of teachers not having edited any teaching tasks. Those that did edit the teaching task tended to also edit either standards or texts, and a third of teachers also reached the stage of editing skills/mini-tasks and the rubric. On a positive note, there was evidence that nearly two thirds of teacher participants implemented modules in the classroom, but just about half of that group met the adequate implementation threshold of uploading student work for two modules.

Leader attendance was a bright spot, with most administrators and teacher leaders attending at least two of four meetings. There were gaps, however, in more regular and

intensive leadership support. In most schools, teacher leaders did not manage to meet with their coaches monthly. And according to teachers, administrators only made it to about half of teachers' classrooms to observe LDC instruction.

Variation across schools was substantial, with some schools meeting fidelity on as many as eight to 10 indicators, and on the other end, some schools struggling with nearly every aspect of implementation. No patterns emerged for cohort and school-level subgroups with Cohort 1 and Cohort 2 schools and elementary and secondary schools meeting similar levels of fidelity, despite great variation within each of the subgroups. Analysis of implementation in 2018–2019 will yield additional information on how fidelity changes over time.

7.0 Student Outcome Analysis

This section presents the student outcome analysis we conducted to evaluate LDC's impact on student learning in the 2017–2018 school year. As described earlier, our LDC teacher sample included both elementary and middle school teachers from two cohorts of LDC schools in the study district. Some of the LDC teachers in Cohort 1 schools were in their second year of LDC implementation (having participated in 2016–2017) and some of the teachers newly joined the existing PLCs in 2017–2018. LDC teachers from Cohort 2 schools were all in their first year of participating in LDC in 2017–2018. Separate sampling and analyses were conducted for three groups of teachers: Cohort 1 returning middle school teachers, Cohort 2 elementary school teachers, and Cohort 2 middle school teachers.

We could not conduct analyses for the other groups of teachers because of sample sizes. More specifically, we could not conduct meaningful analyses of the impact of Cohort 1 returning or Cohort 1 new elementary school teachers due to the small number of students who were taught by these Cohort 1 teachers and for whom we have 2015–2016 baseline data. There was also too small a number of students connected to Cohort 1 new middle school teachers in 2017–2018 to conduct meaningful analyses.

We begin this chapter by describing the process we used to define the LDC student samples for each analysis and to construct matched comparison samples. We then present descriptive statistics for the treatment and comparison groups. Finally, we report the estimated impact of LDC on students as measured by the Smarter Balanced Assessment scores in English language arts (ELA).

7.1 LDC Sample and the Matching Process

As described earlier, our LDC teacher sample included both elementary and middle school teachers in the study district. Separate sampling and analyses were conducted for these two groups of teachers, as described in Section 2.5 of this report (Analytical Approaches).

Cohort 1 returning middle school sample. The eligible LDC sample for the Cohort 1 returning middle school analysis includes all students (a) who were enrolled in one school campus for the entire 2017–2018 school year under the instruction of at least one of the participating LDC teachers in their second year of LDC participation, and (b) for whom baseline achievement scores, outcome year achievement scores, and demographic data were available. Achievement and demographic data were used in the matching process.

The 2017–2018 Cohort 1 returning middle school sample prior to the CEM process included four schools, 22 Cohort 1 returning middle school teachers who consented to participate in the evaluation study, and their 1,111 students. After the student-level matching, our final Cohort 1 returning middle school LDC sample included 995 students and the same number of teachers and schools prior to matching (see Table 7.1).

Prior to matching, the potential middle school comparison sample consisted of 116 schools, 3,874 teachers, and 50,664 students. This comparison sample was substantially reduced during the first stage of matching, which identified up to five schools that closely resembled each of the four LDC middle schools. After student-level CEM, a workable analytic comparison sample consisted of 19 schools, 313 teachers, and 995 students.

Table 7.1

Before and After Matching Sample Sizes: Cohort 1 Middle School Analysis

Stage	LDC sample			Comparison sample		
	Schools	Teachers	Students	Schools	Teachers	Students
Stage 1						
Before matching	4	22	1,111	116	3,874	50,664
After matching	4	22	1,111	19	555	11,593
Stage 2						
After matching	4	22	995	19	313	995

Cohort 2 elementary sample. As with the Cohort 1 analysis, the eligible LDC sample for the Cohort 2 elementary school analysis includes all students (a) who were enrolled in one school campus for the entire 2017–2018 school year under the instruction of at least one of the participating LDC teachers, and (b) for whom baseline achievement scores, outcome year achievement scores, and demographic data were available. Achievement and demographic data were used in the two-stage matching process.

Table 7.2

Before and After Matching Sample Sizes: Cohort 2 Elementary School Analysis

Stage	LDC sample			Comparison sample		
	School	Teacher	Student	School	Teacher	Student
Stage 1						
Before matching	21	85	1,524	470	3,529	75,898
After matching	21	85	1,524	103	737	12,168
Stage 2						
After matching	21	85	1,379	102	509	1,379

As reported in Table 7.2, the resulting LDC sample included 21 schools, 85 teachers, and 1,524 students prior to the CEM process. After the CEM student-level matching, our final Cohort 2 elementary LDC sample was reduced to 1,379 students. Prior to matching, the potential comparison sample consisted of 470 schools, 3,529 teachers, and 75,898 students. This comparison sample was substantially reduced during the first stage of matching, which identified up to five schools that most closely resembled each of the 21 LDC schools. After student-level CEM, a workable analytic comparison sample of 102 schools, 509 teachers, and 1,379 students was constructed.

Cohort 2 middle school sample. The eligible LDC sample includes all students (a) who were enrolled in one school campus for the entire 2017–2018 school year under the instruction of at least one of the participating LDC teachers, and (b) for whom baseline achievement scores, outcome year achievement scores, and demographic data were available. Achievement and demographic data were used in the matching process. Again, we employed a two-stage matching process to select schools and students.

As shown in Table 7.3, the resulting Cohort 2 LDC middle school sample included 10 schools, 43 teachers, and 2,574 students prior to the CEM process. After the CEM student-level matching, our final secondary LDC sample was reduced to 2,382 students.

Table 7.3

Before and After Matching Sample Sizes: Cohort 2 Middle School Analysis

	LDC sample			Comparison sample		
	Schools	Teachers	Students	Schools	Teachers	Students
Stage 1						
Before matching	10	43	2,574	116	3,876	52,393
After matching	10	43	2,574	49	1,356	31,109
Stage 2						
After matching	10	43	2,382	48	807	2,382

Prior to matching, the potential comparison sample consisted of 116 schools, 3,876 teachers and 52,393 students. This comparison sample was substantially reduced during the first stage of matching, which identified up to five schools that closely resembled each of the 10 LDC schools. After student-level CEM, a workable analytic comparison sample of 48 schools, 807 teachers, and 2,382 students was constructed (see Table 7.3).

7.2 Descriptive Results on the Matched Analytic Samples

Tables 7.4, 7.5, and 7.6 present the characteristics of the LDC student and comparison students in the final analytical samples for the Cohort 1 returning middle school, Cohort 2 elementary, and Cohort 2 middle school analyses respectively. Treatment and comparison samples matched very closely. Exact matching was achieved on some variables, and all demographic variables were within five percentage points. We used the spring 2018 Smarter Balanced ELA tests as our outcome measures in all analyses. The Cohort 1 analysis used the spring 2016 Smarter Balanced ELA tests as one of the matching variables while the Cohort 2 analyses used the spring 2017 Smarter Balanced ELA tests.

For the baseline achievement matching variable, we standardized Smarter Balanced scale scores at each grade level relative to district performance, based on the district mean and standard deviation for the ELA test at each grade level. Standardizing scores in this way enables us to easily compare our samples' performance relative to the district's and to compare scores across grades and years more easily. A standardized scale score of zero, for example, indicates that the student scored at the mean for all other students in the district who took the same test. A standardized scale score of 1.0 meant that the student scored one standard deviation higher than the district mean. Conversely, a standardized scale score of -1.0 indicated that the student scored one standard deviation lower than the district mean.

The final LDC Cohort 1 middle school student sample after matching was composed almost entirely of Hispanic students eligible for free or reduced-price lunches (see Table 7.4). The sample was also mostly comprised of students who were in fifth and sixth grade (93.5% combined) in the baseline year (and therefore in seventh and eighth grade in 2017–2018). English language learners represented over one quarter of this sample, while special education students and those classified as gifted represented slightly more than 10% each. Mean performance on the baseline year assessments was more than one quarter of a standard deviation lower than the districtwide performance levels in both mathematics and ELA.

The final Cohort 2 LDC elementary student sample (see Table 7.5) was about three quarters Hispanic and almost two thirds were eligible for free and reduced-priced lunches. The sample was mostly composed of students in third grade (44.8%) and fourth grade (48.7%) in the baseline year. English language learners represented slightly less than one quarter of this sample, while special education students and those classified as gifted each represented slightly less than 10% of the sample. In addition, mean performance on the baseline year assessments was slightly higher or about the same for LDC students as compared to districtwide performance levels in mathematics and ELA.

As shown in Table 7.6 the final Cohort 2 LDC middle school student sample included a very large proportion of Hispanic students (91.4%), and a majority of students with low socioeconomic backgrounds (59.5%). The sample was mostly composed of students that were in fifth grade (58.3%) and sixth grade (35.2%) in the baseline year. English language learners

represented slightly more than one tenth of this sample, while there were about twice as many gifted (16.8%) than special education students (8.1%). In addition, mean performance on the baseline year assessment was about the same for LDC students as compared to districtwide performance levels in mathematics and ELA.

Table 7.4

2015–2016 Student Characteristics of the Cohort 1 Returning Middle School Treatment and Comparison Groups After Matching

Student characteristic	Treatment group (*n* = 995)	Comparison group (*n* = 995)
Race/ethnicity		
Hispanic (%)	97.6	97.6
Black (%)	1.7	1.7
Asian (%)	0.2	0.2
White (%)	0.3	0.3
Other (%)	0.2	0.2
Female (%)	50.1	50.1
Special programs status		
Poverty (%)	95.6	93.1
English language learner (%)	29.3	29.3
Special education (%)	11.8	14.2
Gifted (%)	11.4	12.6
Student baseline achievement		
Mean baseline year mathematics Z score	-0.254	-0.221
Mean baseline year ELA Z score	-0.299	-0.302
Class and teacher characteristics		
Mean baseline ELA Z score of current peers	-0.306	-0.260
Teacher years of experience	96.8	95.7
Grade level at baseline year		
Grade 4 in 2015–2016 (%)	6.5	6.5
Grade 5 in 2015–2016 (%)	58.3	58.3
Grade 6 in 2015–2016 (%)	35.2	35.2

Table 7.5

2016–2017 Student Characteristics of the Cohort 2 Elementary School Treatment and Comparison Groups After Matching

Student characteristic	Treatment group (*n* = 1,379)	Comparison group (*n* = 1,379)
Race/ethnicity		
Hispanic (%)	74.0	74.0
Black (%)	10.2	10.2
Asian (%)	3.7	3.9
White (%)	9.1	10.0
Other (%)	3.0	1.9
Female (%)	51.0	51.0
Special programs status		
Poverty (%)	62.7	62.4
English language learner (%)	21.4	21.4
Special education (%)	7.8	10.6
Gifted (%)	9.7	8.3
Student baseline achievement		
Mean baseline year mathematics Z score	0.087	0.057
Mean baseline year ELA Z score	0.003	0.019
Class and teacher characteristics		
Mean baseline ELA Z score of current peers	-0.026	-0.000
Teacher years of experience	16.9	13.4
Grade level at baseline year		
Grade 3 in 2016–2017 (%)	44.8	44.8
Grade 4 in 2016–2017 (%)	48.7	48.7
Grade 5 in 2016–2017 (%)	6.5	6.5

Table 7.6

2016–2017 Student Characteristics of the Cohort 2 Middle School Treatment and Comparison Groups After Matching

Student characteristic	Treatment group (*n* = 2,382)	Comparison group (*n* = 2,382)
Race/ethnicity		
Hispanic (%)	91.4	91.4
Black (%)	3.6	3.6
Asian (%)	1.1	1.3
White (%)	2.6	3.0
Other (%)	1.3	0.7
Female (%)	49.3	49.3
Special programs status		
Poverty (%)	59.5	60.4
English language learner (%)	11.4	11.4
Special education (%)	8.1	8.1
Gifted (%)	16.8	18.6
Student baseline achievement		
Mean baseline year mathematics Z score	-0.010	0.012
Mean baseline year ELA Z score	-0.011	0.003
Class & teacher characteristics		
Mean baseline ELA Z score of current peers	-0.028	-0.058
Teacher years of experience	14.8	10.5
Grade level		
Grade 5 in 2016–2017 (%)	11.7	11.7
Grade 6 in 2016–2017 (%)	46.2	46.2
Grade 7 in 2016–2017 (%)	42.1	42.1

7.3 Outcome Analysis Results: Cohort 1 Middle School Sample

As discussed in detail in Chapter 2, middle school students could be exposed to between zero and six different LDC teachers in a given year. Using an MMMC design, each observation at Level 1 represented one student, who was linked to the ELA, social studies/history and science teachers that student was exposed to during the year. Weights across teachers for each student summed to a unity (1).

Two different approaches were used to model the LDC treatment intervention variable as a fixed effect at the student level. The first model was dosage dependent, and took into account variation in middle school students' level of exposure to LDC teachers. In this approach, the treatment variable was structured as a continuous response variable between zero and one, based on exposure to LDC teachers for ELA, social studies/history and/or science. In contrast, the second approach was modeled as dosage independent, and considered any student exposed to any LDC intervention teacher in at least one subject to be a treated individual. In this latter approach the treatment variable was dichotomous, coded as one for LDC treated students and zero for comparison students.

Table 7.7

Cohort 1 Returning LDC Middle School Teacher Effect Estimates on 2017–2018 Smarter Balanced ELA Performance, Dosage-Dependent and Dosage-Independent Models

Variables	Dosage-dependent model coefficient (*SE*)	Dosage-independent model coefficient (*SE*)
Level 2 LDC teacher treatment	0.118 (0.116)	0.050 (0.083)
Level 1 student characteristics		
Hispanic	-0.216 (0.127)	-0.215 (0.127)
Black	-0.271 (0.151)	-0.270 (0.151)
Poverty	-0.077 (0.046)	-0.078 (0.046)
Female	0.173 (0.022)*	0.173 (0.022)*
English language learner	-0.113 (0.029)*	-0.113 (0.029)*
Special education	0.075 (0.040)	0.075 (0.040)
Gifted	0.018 (0.040)	0.018 (0.040)
Honors English	0.169 (0.056)*	0.169 (0.056)*
Baseline peer ELA Z score	0.109 (0.057)	0.109 (0.057)
Baseline year mathematics Z score	0.189 (0.020)*	0.189 (0.020)*
Baseline year ELA Z score	0.439 (0.021)*	0.439 (0.021)*

Note. Based on the dosage-dependent model, the average treated student received a 0.485 treatment dosage. Because of this, using the dosage-dependent model we could estimate an average treatment on the treated (ATT) at (0.485 × 0.118) = 0.057.
*p = .05.

In Table 7.7 we present results of both the dosage-dependent and dosage-independent models on middle school students' ELA performance in 2017–2018. As can be seen, model results for the LDC effect on student outcomes are in the positive direction, but are not statistically significant for either model. In other words, neither analysis provided sufficient

evidence to conclude that students taught by LDC teachers performed better on the ELA test than did their matched peers in the comparison group.

The significant effects of the covariates on student performance also were similar under the two models and were in the expected directions. Baseline ELA performance was the strongest predictor and baseline mathematics performance also helped explain the outcome. In addition to baseline achievement, three demographic variables helped predict performance: English language learners performed at lower levels than English only and reclassified fluent English proficient students, females performed at significantly higher levels than males, and students enrolled in honors English courses performed at higher levels than did their peers taking standard English courses.

7.4 Outcome Analysis Results: Cohort 2 Elementary Sample

In general, elementary students who were enrolled in the same school for the entire year were connected to just one teacher. On rare occasions, however, elementary students were taught by multiple teachers rather than a single one. For this reason, and to allow all teachers into the analysis we once again employed an MMMC design. The outcome was students' Smarter Balanced scores in ELA. For technical reasons related to evaluating effect sizes, Smarter Balanced scale scores were standardized to the study sample.

As discussed in detail in Chapter 2, students could be exposed to between zero and three different LDC teachers at the elementary school level. Using an MMMC design, each observation at Level 1 represented one student, who was linked to the ELA, social studies/history, and science teachers that a student was exposed to during the year. Weights across teachers for each student summed to a unity (1).

In the middle school analysis, we presented results of models that are both dosage dependent and dosage independent. Since the great majority (99%) of students in the Cohort 2 elementary analysis were connected with a single teacher, findings for the two models become nearly identical. As a result, we only present the dosage-independent model. As shown in Table 6.8, model results show no statistically discernible LDC effect on the student outcome. In other words, students taught by LDC teachers scored similarly on the ELA test to their matched peers in the comparison group.

The effects of the covariates on student performance were similar to those in the Cohort 1 middle school model, but included some additional significant variables. In addition to baseline ELA and mathematics performance, English language learner status, and gender, the variables of Black ethnicity, Hispanic ethnicity, special education, and average baseline ELA achievement of a student's peers were all significant predictors of ELA performance and were in the expected directions.

Table 7.8

Cohort 2 LDC Elementary School Teacher Effect Estimates on 2017–2018 Smarter Balanced ELA Performance, Dosage-Independent Model

Variables	Dosage-independent model coefficient (*SE*)
Level 1 LDC teacher treatment	0.026 (0.034)
Level 2 student characteristics	
Hispanic	-0.058 (0.028) *
Black	-0.166 (0.040) *
Poverty	-0.029 (0.019)
Female	0.100 (0.017) *
English language learner	-0.110 (0.030) *
Special education	-0.093 (0.031) *
Gifted	0.014 (0.034)
% teachers with < 3 years of experience	-0.001 (0.000)
Baseline peer ELA Z score	0.056 (0.026) *
Baseline year mathematics Z score	0.223 (0.017) *
Baseline year ELA Z score	0.501 (0.017) *

*p = .05.

7.4 Outcome Analysis Results: Cohort 2 Middle School Sample

Similar analyses to those conducted for Cohort 1 middle schools were conducted for the Cohort 2 middle school sample. At the middle school level, the norm was student exposure to multiple teachers. As discussed in detail in Chapter 2, students could be exposed to anywhere between zero and six different LDC teachers. Using an MMMC design, each observation at Level 1 represented one student, which was linked to the ELA, social studies/history, and science teachers that student was exposed to during the year. Weights across teachers for each student summed to a unity (1).

In Table 7.9 we present results of models that are both dosage dependent and dosage independent. Dosage-dependent model results indicate a statistically significant and positive LDC effect on the student outcome. In contrast, the dosage-independent model did not yield a statistically significant LDC effect. The significant dosage-dependent effect suggests that increased student exposure to LDC teachers was connected to improved ELA test performance. More specifically, treatment students with exposure to LDC in all three subjects were estimated to perform 0.149 standard deviations above matched comparison students. The average treatment student, however, had a 44% exposure to LDC in core content classes, and is

estimated to perform 0.066 standard deviations above matched comparison students (the average treatment on treated effect).

Table 7.9

Cohort 2 LDC Middle School Teacher Effect Estimates on 2017–2018 Smarter Balanced ELA Performance

Variables	Dosage-dependent model coefficient (*SE*)	Dosage-independent model coefficient (*SE*)
Level 1 LDC teacher treatment	0.149 (0.063) *	0.055 (0.038)
Level 2 student characteristics		
Hispanic	-0.042 (0.034)	-0.042 (0.034)
Black	-0.178 (0.050) *	-0.180 (0.050) *
Poverty	-0.019 (0.014)	-0.019 (0.014)
Female	0.104 (0.013) *	0.104 (0.013) *
English language learner	-0.113 (0.025) *	-0.112 (0.025) *
Special education	-0.108 (0.028) *	-0.108 (0.028) *
Gifted	0.059 (0.021) *	0.059 (0.021) *
Honors course	0.146 (0.028) *	0.148 (0.028) *
% teachers with < 3 years of experience	-0.000 (0.001)	-0.000 (0.001)
Baseline peer ELA Z score	0.003 (0.028)	0.002 (0.028)
Baseline year mathematics Z score	0.220 (0.013)	0.221 (0.013) *
Baseline year ELA Z score	0.513 (0.013) *	0.513 (0.013) *

Note. For the dosage-dependent model, since the average treatment student received a 0.440 treatment dosage, we could estimate an average treatment on the treated (ATET) at 0.44 × 0.149 = 0.066.
*p = .05.

7.5 Summary and Interpretation of Results

Here we summarize the quasi-experimental results and provide a lens through which the reader can contextualize the magnitude of the results. In Figures 7.1 and 7.2, we present the dosage-dependent effects for each of the three analyses. Figure 7.1 depicts the estimated impacts of LDC in the three samples on students exposed to LDC teachers in all three major content areas: ELA, social studies/history, and science. The effect sizes for these estimates can be best understood as the estimated impact of LDC under ideal conditions. Figure 7.2 depicts the estimated impact of LDC in the three samples on the average observed student, who in the middle school context had considerably less exposure to LDC teachers in her core content classes.

Figure 7.1. Treatment effect on 2017–2018 Smarter Balanced ELA scores with 95% confidence interval for students with full LDC dosage, by cohort.

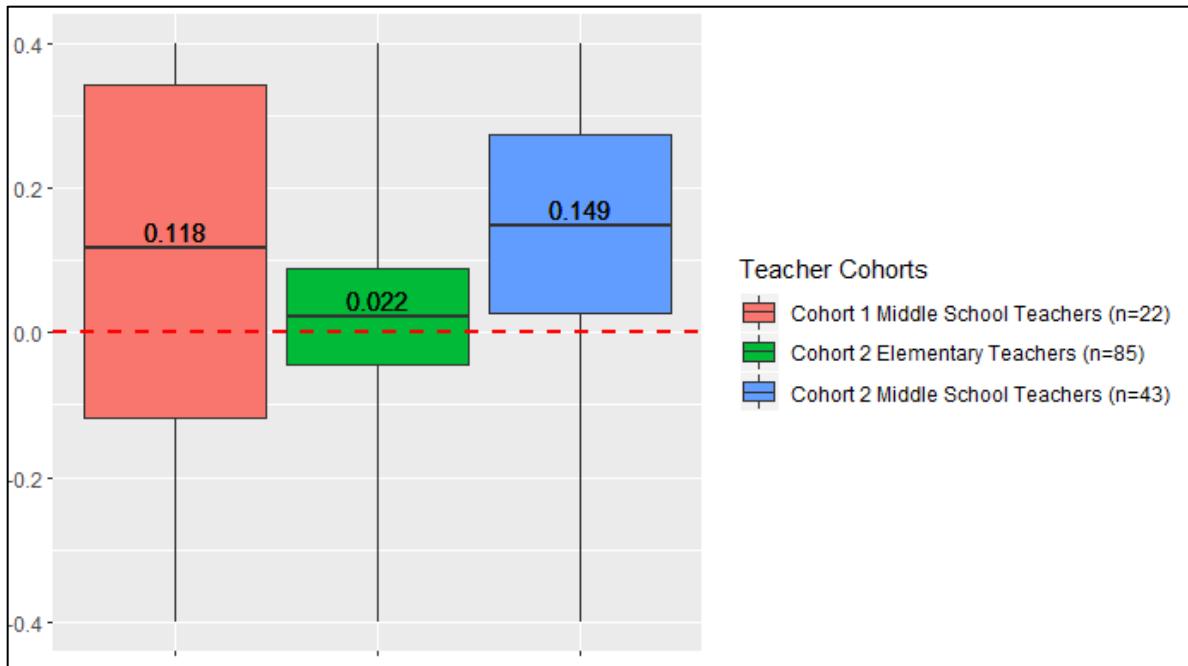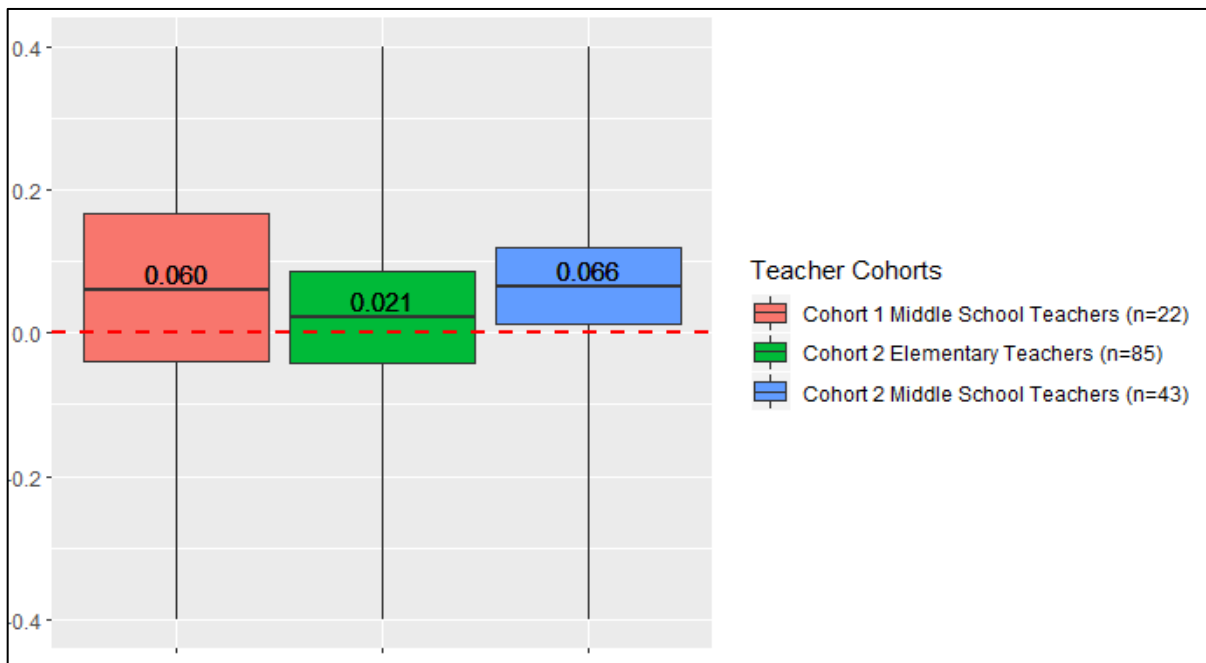*Figure 7.2.* Treatment effect on 2017–2018 Smarter Balanced ELA scores with 95% confidence interval for students with average LDC dosage, by cohort.

As can be seen in the figures, the lower bound of the confidence intervals around the estimates for the impact of Cohort 2 middle school teachers is above zero. For the other two analyses, the confidence intervals cross the zero line, and therefore the estimates are not

statistically significant at the 95% level. Not that the estimates for the impact of Cohort 1 middle school teachers are similar to those of the Cohort 2 middle school teachers. The confidence intervals, however, are much wider due to a considerably smaller sample size of teachers and associated students. Attrition was certainly a factor in the precision of the estimate for Cohort 1 teachers.

The vast majority of elementary students were associated with just one teacher who taught them in all three core content areas. As a result, dosage for elementary school students was nearly identical in the two models, and the effect estimates produced were nearly identical as well.

To help the reader contextualize the statistically significant effects for Cohort 2 middle school teachers, we utilize an approach developed by Hill et al. (2008), which involves benchmarking against average student gains over the course of a school year. The authors reviewed annual achievement gains in seven nationally normed reading assessments: California Achievement Test (CST) fifth edition, Stanford Achievement Test (SAT) ninth edition, TerraNova-Comprehensive Test of Basic Skills (CTBS), Gates-MacGinitie Reading Test, Metropolitan Achievement test (MAT) eight edition, Terra Nova-CAT, and SAT tenth edition. They found that students gained an average of .32 standard deviations from Grade 5 to 6, .23 standard deviations from Grade 6 to 7, and .26 standard deviations from Grade 7 to 8. A simple mean of these three average gains is .27.

Using this benchmark, and assuming a 9-month school year, the .066 effect estimate for students with average observed LDC dosage is of a similar magnitude to **2.2 months of learning** in the Hill et al. (2008) meta-analysis [(.066/.27)*9=2.2]. Likewise, the .149 effect estimate for students with full LDC dosage aligns to approximately **5 months of schooling** [.149/.27)*9=5]. It is important to note again that the ideal conditions of students being exposed to LDC in all three core content areas across the whole school year was not met for most students; therefore, the extrapolation of 2.2 months is the figure best aligned with the actual observed effect of LDC.

While the results are encouraging, it is important to note that results in this report are exploratory. The statistically significant effects found were for teachers in their first year of implementation, while the evaluation's confirmatory research questions focus solely on teachers in their second year of implementation. Confirmatory results will depend partially on Smarter Balanced outcome scores in spring of 2019, and the ability of QED analyses to detect effects will depend on sample size (and therefore attrition). Another reason for caution is that the study by HIll et al. (2008) is over 10 years old, and Smarter Balanced may have different average gains. Nevertheless, the extrapolations offer a useful way to benchmark effect sizes against expected learning in the middle school years, and help contextualize the magnitude of the results.

8.0 Summary of Findings

This annual report examines LDC following two years of implementation in Cohort 1 schools and one year of implementation in Cohort 2 schools. We summarize these results organized by the three categories of evaluation questions we listed in Chapter 1 of this report.

8.1 Program Characteristics and Implementation

Consistent with prior year results, participants reported overwhelmingly positive attitudes toward LDC and its implementation at their schools. Teachers generally appreciated the opportunity to collaborate with colleagues, and nearly uniformly praised their LDC coaches. Prior to 2017–2018, LDC made further refinements to the content, sequencing, and delivery of CoreTools' online courses with the intent of streamlining the learning process for PLC members. To some extent this effort seems to have been successful as open-ended responses in our survey did not reference instructional content as a problem (as was common in the pilot year). Analysis of CoreTools data, however, revealed that teachers are being exposed to a relatively small proportion of the content that LDC intended for them to engage with.

In 2017–2018, local PLC leadership was assigned to a teacher leader rather than a project liaison. The role was strengthened by providing a stipend to the individual, and principals and assistant principals were no longer permitted to play that role. Again, these program changes seem to have been effective. PLC members overwhelmingly reported that their teacher leaders were supportive, knowledgeable, and helpful. Teacher leaders themselves also reported high satisfaction with support from coaches, professional development offerings, and how the teacher leader role allowed them to be instructional leaders in their schools.

Evidence suggest that implementation was largely faithful to the intended structure of LDC, although the level of implementation was not uniformly high. Most PLCs met at least every other week as they were expected to do, but some PLCs struggled to meet frequently and ensure high attendance. Coaches provided feedback through multiple mechanisms, but PLC members did not always find the feedback useful. Analysis of program data suggests that nearly all participants were engaging with the module building platform, although that engagement did vary greatly across individuals. Module analysis suggests that the materials adapted and created by PLC members varied in levels of completion, however, and based on presence of uploaded student work, a sizable number of modules might not have been implemented in the classroom.

An encouraging development was the increase in average quality of modules relative to prior years. This finding is somewhat tempered by the fact that our exploratory analysis did not show an increase in quality from 2016–2017 to 2017–2018 for Cohort 1 teachers who completed modules in both years. The sample size for that growth analysis was, however, very small, and we anticipate that with lower attrition in Cohort 2, we will be able to learn more about change in module quality within teachers over time.

8.2 Contextual Factors and Implementation

As previously noted, coaches and teacher leaders were almost universally praised by teachers participating in LDC. Teachers also generally reported that their school administrators were supportive of the program, although administrators' level of participation in PLC meetings and observation of LDC instruction varied greatly across the sample. Survey respondents were less confident that district-level administrators were knowledgeable about and supportive of the LDC program in their schools.

As in prior years, adequate time was a frequently cited concern, with some respondents hoping for more collaborative time, more prep time, time before the start of the year, and/or compensated time. Technology also remained a problem for some participants. Some respondents were frustrated with technical problems that marred the experience of Zoom meetings, and some respondents simply would have preferred in-person rather than digital meetings with coaches. On a positive note, respondents seemed to report less difficulty with the CoreTools platform than in prior years, which may relate to both increased skills on the part of Cohort 1 participants, and refinements made by LDC to the platform.

One new issue that surfaced this year was the challenge faced by new teacher participants joining established PLCs. Survey responses from this subgroup were less enthusiastic in a number of areas, such as effectiveness of the PLC, usefulness of coach feedback, and their own capacity to be a part of shaping the initiative. CoreTools analyses showed that Cohort 1 new teachers demonstrated less engagement in terms of viewing, editing, and commenting on modules. These findings suggest that new participants may have felt that the program was not sufficiently differentiated for their needs.

8.3 Program Impacts

Based on survey results, LDC was perceived to have positive impacts on a range of both teacher practices and student skills. Teachers in general felt that LDC had improved their instructional planning and pedagogical skill sets and was also helping to promote collaboration between teachers. Module analysis suggests that overall mean module quality was higher in 2017–2018 than 2016–2017.

Sufficient sample size was available to conduct quasi-experimental tests of the impact of LDC on students under Cohort 1 returning middle school teachers, and under Cohort 2 elementary and middle school students. All effect estimates were in the positive direction, with a statistically significant effect found for Cohort 2 middle school teachers when LDC treatment was treated as a continuous variable accounting for students' different levels of exposure to LDC teachers.

References

Browne, W. J., Goldstein, H., & Rasbash, J. (2001). Multiple membership multiple classification (MMMC) models. *Statistical Modelling, 1*(2), 103-124.

Carlson, N. M., & McCaslin, M. (2003). Meta-inquiry: An approach to interview success. *The Qualitative Report*, *8*(4), 549-569.

Fix, E., & Hodges, J. (1951). *Discriminatory analysis, nonparametric discrimination: Consistency properties* (Technical Report 4). Randolph Field, TX: USAF School of Aviation Medicine.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. New York, NY: Aldine.

Herman, J. L., Epstein, S., Leon, S., Dai, Y., La Torre Matrundola, D., Reber, S., & Choi, K. (2015a). *The implementation and effects of the Literacy Design Collaborative (LDC): Early findings in eighth grade history/social studies and science courses* (CRESST Report 848). Los Angeles: University of California, Los Angeles, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Herman, J. L., Epstein, S., Leon, S., Dai, Y., La Torre Matrundola, D., Reber, S., & Choi, K. (2015b). *The implementation and effects of the Literacy Design Collaborative (LDC): Early findings in sixth grade Advanced Reading courses* (CRESST Report 846). Los Angeles: University of California, Los Angeles, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Herman, J., Epstein, S., & Leon, S. (2016). Supporting Common Core instruction with Literacy Design Collaborative. *AERA Open*, *2*(3), 2332858416655782.

Hill, C. J., Bloom, H. S., Black, A. R., & Lipsey, M. W. (2008). Empirical benchmarks for interpreting effect sizes in research. *Child Development Perspectives*, *2*(3), 172-177.

Iacus, S. M., King, G., & Porro, G. (2011). Causal inference without balance checking: Coarsened exact matching. *Political Analysis*, mpr013.

Reisman, A., Herman, J., Luskin, R., & Epstein, S. (2013). *Summary report: Developing an assignment measure to assess quality of LDC modules* (Deliverable to funder)*. Los Angeles: University of California, Los Angeles, National Center for Research on Evaluation, Standards, and Student Testing.

Shavelson, R. J., & Webb, N. M. (1991). *Generalizability theory: A primer.* Thousand Oaks, CA: Sage.

Tranmer, M., Steel, D., & Browne, W. J. (2014). Multiple-membership multiple-classification models for social network and group dependences. *Journal of the Royal Statistical Society. Series A, (Statistics in Society)*, *177*(2), 439–455. http://doi.org/10.1111/rssa.12021

Wang, J., Neskovic, P., & Cooper, L. N. (2007). Improving nearest neighbor rule with a simple adaptive distance measure. *Pattern Recognition Letters, 28*(2), 207-213.

2017–2018
LDC Teacher Survey

1	**LDC Participation**

T1. **Please select your school from the drop down box.**
Teachers are skipped to T3 if they teach in an elementary school.

T2a. **In the current school year (2017-18), how many classes did you teach?**

☐ classes   *n* = 91, Mean = 4.62, Range: 1–7

T2b. **In how many of these classes did you use LDC modules and/or mini-tasks?**

☐ classes   *n* = 91, Mean = 2.70, Range: 0–7

T2c. **In what content areas did you use LDC modules and/or mini-tasks?**

_____

T2d. **In what grades did you use LDC modules and/or mini-tasks?**

_____

T3. **Prior to the current school year (2017-18), did you have any experience with LDC?**

(*n = 245*)

☐ Yes   61 teachers 24.9%

☐ No   ⬇ Skip to T5a   184 teachers 75.1%

T4. How many of the following did you teach prior to the current school year (2017-18)?

☐   LDC modules   *n* = 60, Mean = 1.67, Range: 0–10

☐   LDC mini-tasks, outside of modules   *n* = 60, Mean = 1.95, Range: 0–10

2	**Professional Learning Community and Teacher Collaboration**

T5a. Did you participate this year in a Professional Learning Community (PLC) at least partly focused on implementing LDC in your school?

(*n = 204*)

☐ Yes   ⬇ Skip to T6   196 teachers 96.1%

☐ No   8 teachers 3.9%

T5b. Did you use any LDC tools in your instructional planning or classroom instruction this year?

(*n = 8*)

☐ Yes   ⬇ Skip to 5d   8 teachers (100%)

☐ No   0 teachers (0%)

T5c. Why did you choose not to use any LDC tools in your instructional planning or classroom instruction this year?

[Survey ends here for respondents answering question T5c]

T5d. What LDC tools did you use during the current school year? Select all that apply.

(*n* = 8)

☐ CoreTools online platform to access existing modules or mini-tasks — 8 teachers (100%)

☐ CoreTools online platform to design modules or mini-tasks — 4 teachers (50.0%)

☐ LDC online courses — 2 teachers (25.0%)

☐ Modules or mini-tasks given to me by other teachers in my school — 2 teachers (25.0%)

☐ Other (please specify) _____ — 0 teachers (0%)

[Survey ends here for respondents answering question T5d]

T6. About how often did your LDC PLC meet?

(*n* = 236)

☐ Less than once a month — 3 teachers (1.3%)

☐ Once a month — 53 teachers (22.5%)

☐ Every other week — 151 teachers (64.0%)

☐ Once a week — ⬇ Skip to T8 — 28 teachers (11.9%)

☐ Twice a week or more often — ⬇ Skip to T8 — 1 teacher (0.4%)

T7. What were the primary barriers preventing your LDC PLC from meeting weekly? Select all that apply.

(*n* = 207)

☐ PLC time was not protected. — 38 teachers (18.4%)

☐ PLC members had limited interest in attending meetings. — 23 teachers (11.1%)

☐ School administrator did not make it a priority. — 20 teachers (9.7%)

☐ Teacher Leader did not provide sufficient organizational support. — 6 teachers (2.9%)

☐ Not enough teachers participated. — 17 teachers (8.2%)

☐ PLC members had other priorities that compete with LDC participation. — 112 teachers (54.1%)

☐ Other (please specify) _____ — 72 teachers (34.8%)

T8. About how often did you have informal discussions (as opposed to scheduled meetings) about LDC with teachers in your LDC PLC?

(*n* = 236)

☐	Less than once a month	31 teachers (13.1%)
☐	Once a month	43 teachers (18.2%)
☐	Every other week	54 teachers (22.9%)
☐	Once a week	71 teachers (30.1%)
☐	Twice a week or more	37 teachers (15.7%)

T9. On average, how long did your school's LDC PLC meetings typically last?

(*n* = 236)

☐	Less than 45 minutes	11 teachers (4.7%)
☐	45 to 59 minutes	134 teachers (56.8%)
☐	60 to 74 minutes	86 teachers (36.4%)
☐	75 minutes or more	5 teachers (2.1%)

3   Teacher Training and Support

T10. How effective was your LDC PLC in the following areas?

	Not effective	A little effective	Moderately effective	Very effective
Creating an environment in which teachers were comfortable working together (*n* = 236)	5 (2.1%)	9 (3.8%)	107 (45.3%)	115 (48.7%)
Fostering an environment where teachers shared their instructional plans with colleagues (*n* = 236)	4 (1.7%)	25 (10.6%)	100 (42.4%)	107 (45.3%)
Allowing space to share student work (*n* = 236)	7 (3.0%)	33 (14.0%)	99 (41.9%)	97 (41.1%)
Helping teachers to improve their LDC instructional plans. (*n* = 236)	10 (4.2%)	39 (16.5%)	108 (45.8%)	79 (33.5%)

T11. How would you rate each of the following aspects of the online course material (in the Learn tab in LDC CoreTools) that your coach used or directed you to use?

	Poor	Fair	Good	Excellent
Clarity of information presented (*n* = 236)	6 (2.5%)	47 (19.9%)	138 (58.5%)	45 (19.1%)
Relevance of information presented (*n* = 236)	3 (1.3%)	55 (23.3%)	116 (49.2%)	62 (26.3%)
Ease of use (*n* = 236)	20 (8.5%)	88 (37.3%)	100 (42.4%)	28 (11.9%)
Usefulness of resource documents (e.g., LDC Pitfall Checklist, CCSS Mental Markers, etc.) (*n* = 236)	14 (5.9%)	48 (20.3%)	126 (53.4%)	48 (20.3%)
Usefulness of videos (*n* = 236)	17 (7.2%)	83 (35.2%)	111 (47.0%)	25 (10.6%)
Degree to which course material helped teachers to create and/or adapt LDC modules (*n* = 236)	9 (3.8%)	68 (28.8%)	115 (48.7%)	44 (18.6%)
Opportunity to extend learning when needed or desired (*n* = 236)	11 (4.7%)	61 (25.8%)	111 (47.0%)	53 (22.5%)

T12a. Overall, were you able to get the feedback and support you needed from your LDC coach (through written feedback in LDC CoreTools, or coaching and modeling in your LDC PLCs) to plan, teach, reflect on, and revise LDC modules)?

(*n* = 236)

☐ Yes   226 teachers (95.8%)

☐ No   10 teachers (4.2%)

T12b. Did your LDC coach provide written feedback on your module(s) in LDC CoreTools in a timely manner?

(*n* = 236)

☐ Yes   219 teachers (92.8%)

☐ No   17 teachers (7.2%)

T13. **Outside of the PLC meetings with your LDC coach, please indicate whether you used each of the following types of coach support, and how helpful you found these types of support.**

	Did not use	Used			
		Not helpful	A little helpful	Moderately helpful	Very helpful
Written feedback in LDC CoreTools from your LDC coach (in the comments areas and/or via the teacher work rubric) (*n* = 236)	49 (20.8%)	5 (2.1%)	41 (17.4%)	82 (34.7%)	59 (25.0%)
One-on-one Zoom video conference and/or call with your LDC coach (*n* = 236)	51 (21.6%)	10 (4.2%)	15 (6.4%)	60 (25.4%)	100 (42.4%)
Email or phone communication with your LDC coach (*n* = 236)	75 (31.8%)	5 (2.1%)	23 (9.7%)	58 (24.6%)	75 (31.8%)
Other Please specify: _____ (*n* = 236)	186 (78.8%)	2 (0.8%)	3 (1.3%)	15 (6.4%)	30 (12.7%)

4   Module Creation

T14. During the current school year (2017-18), how many LDC modules did you individually or collaboratively adapt from existing modules (e.g., modules you created in a prior year and/or modules found in the LDC Library in CoreTools)?

☐   Adapted modules   *n* = 196, Mean = 1.94, Range: 0–4

T15. During the current school year (2017-18), how many LDC modules did you create, either individually or with colleague(s)? Only include modules built from scratch, not those adapted from existing modules in the LDC library.

☐   New modules   *n* = 196, Mean = 0.74, Range: 0–12

T16. How did members of your PLC collaborate to create LDC modules? Check all that apply.

(*n* = 236)

☐ Modules were created by individual teachers.	60 teachers (25.4%)
☐ Modules were created by teams of two or more teachers.	148 teachers (62.7%)
☐ Modules were created by the PLC as a whole.	43 teachers (18.2%)
☐ Other (please specify) _____	37 teachers (15.7%)

T17. Please indicate to what extent you were able to do each of the following when creating LDC modules.

	Not at all	A little bit	A moderate extent	A great extent
Select focus standards for a writing assignment (*n* = 236)	3 (1.3%)	15 (6.4%)	81 (34.3%)	137 (58.1%)
Create a standards-driven writing assignment (*n* = 236)	5 (2.1%)	15 (6.4%)	86 (36.4%)	130 (55.1%)
Select high quality, complex texts and other materials to engage students in deeper learning (*n* = 236)	7 (3.0%)	38 (16.1%)	110 (46.6%)	81 (34.3%)
Identify the skills students need to develop to complete a writing assignment (*n* = 236)	6 (2.5%)	28 (11.9%)	98 (41.5%)	104 (44.1%)
Create daily lessons to teach the skills a student needs to complete a writing assignment (*n* = 236)	19 (8.1%)	44 (18.6%)	109 (46.2%)	64 (27.1%)
Differentiate instruction by incorporating multiple ways of thinking, various levels of complexity, and multiple modalities (*n* = 236)	15 (6.4%)	51 (21.6%)	111 (47.0%)	59 (25.0%)
Plan for a variety of methods to assess student progress (e.g., rubrics and/or mini-task scoring guides) (*n* = 236)	18 (7.6%)	50 (21.2%)	108 (45.8%)	60 (25.4%)
Assess the quality of writing assignments and/or instructional plans using Peer Review/Curriculum Alignment Rubric (e.g. Task Pitfalls Checklist, rubric indicators) (*n* = 236)	14 (5.9%)	50 (21.2%)	99 (41.9%)	73 (30.9%)
Make a writing assignment relevant and engaging for students (*n* = 236)	9 (3.8%)	24 (10.2%)	109 (46.2%)	94 (39.8%)

5   Classroom Implementation

T18. How many total LDC modules did you teach during the current school year (2017-18)?

Modules   *n* = 236, Mean = 2.19, Range: 0–20

T19. Outside of modules, approximately how many individual LDC mini-tasks did you teach during the current school year (2017-18)?

☐ Mini-tasks   *n* = 236, Mean = 4.06, Range: 0–20

T20. Please indicate to what extent you were able to do each of the following activities when teaching LDC modules.

	Not at all	A little bit	A moderate extent	A great extent
Engage students in understanding the assignment and its rubric (*n* = 236)	6 (2.5%)	31 (13.1%)	99 (41.9%)	100 (42.4%)
Engage students in accessing complex text for the purpose of the assignment (*n* = 236)	4 (1.7%)	27 (11.4%)	104 (44.1%)	101 (42.8%)
Systematically collect information about students' progress (*n* = 236)	6 (2.5%)	43 (18.2%)	116 (49.2%)	71 (30.1%)
Provide feedback to students using assignment rubrics (*n* = 236)	11 (4.7%)	39 (16.5%)	113 (47.9%)	73 (30.9%)
Locate evidence of standards in final student work on the writing assignment (*n* = 236)	6 (2.5%)	24 (10.2%)	107 (45.3%)	99 (41.9%)
Use evidence of student progress on standards to modify subsequent instruction (*n* = 236)	7 (3.0%)	39 (16.5%)	110 (46.6%)	80 (33.9%)

T21. Toward the beginning of the school year, did you "find and teach" a module from CoreTools?
(*n* = 236)

☐ Yes   181 teachers (76.7%)

☐ No   ⬇ Skip to T24   55 teachers (23.3%)

T22. What was the name of the Find and Teach module?
_____

T23. Did you make any adjustments to the Find and Teach module?
(*n* = 181)

☐ Yes   145 teachers (80.1%)

☐ No   36 teachers (19.9%)

T24. **What module did you adapt, refine, and/or develop most during the current school year (2017-18)? This module is typically one you worked on *after* the Find and Teach module.**

_____

T25. **Which of these statements best describes how you created the module named in the previous question?**

(*n* = 236)

☐	I created a module from a template in CoreTools.	63 teachers (26.7%)
☐	I found and adjusted another teacher's module from the LDC Library in CoreTools.	173 teachers (73.3%)

T26. **Did you teach this module in your classroom?**

(*n* = 236)

☐	Yes, I have already taught this module this year.	219 teachers (92.8%)
☐	No, but I plan to teach this module before the end of the 2017-18 school year.	7 teachers (3.0%)
☐	No, but I plan to teach this module during next school year.	6 teachers (2.5%)
☐	No. I do not currently have plans to teach this module in my classroom.	4 teachers (1.7%)

6   Module Peer Review

T27. Did you attend a Peer Review/Curriculum Alignment Workshop this school year? (Y/N)

(*n* = 234)

☐	Yes	68 teachers (29.1%)
☐	No	166 teachers (70.9%)

T28. How many modules did you submit online for LDC National Peer Review during the current school year (2017-18)?

☐ Modules   *If none,* ⬇ skip to T30   *n* = 236, Mean = 0.51, Range: 0–4

T29. How helpful did you find the National Peer Review process in improving the quality of your module?

(*n* = 66)

☐ Not helpful	12 teachers (18.2%)
☐ A little helpful	18 teachers (27.3%)
☐ Moderately helpful	25 teachers (37.9%)
☐ Very helpful	11 teachers (16.7%)

7   Impact on Teacher Practice and Learning

T30. Between the beginning and end of this year's work with LDC, please indicate how much your skills have *improved* in the following areas:

	Not at all	A little	Moderately	A great deal
Selecting focus standards for a writing assignment (*n* = 236)	11 (4.7%)	28 (11.9%)	108 (45.8%)	89 (37.7%)
Creating standards-driven writing assignments (*n* = 236)	12 (5.1%)	33 (14.0%)	105 (44.5%)	86 (36.4%)
Identifying the skills students need to develop to complete a writing assignment (*n* = 236)	12 (5.1%)	33 (14.0%)	104 (44.1%)	87 (36.9%)
Creating daily lessons to teach the skills students need to complete a writing assignment (*n* = 236)	19 (8.1%)	39 (16.5%)	121 (51.3%)	57 (24.2%)
Systematically collecting information on students' progress. (*n* = 236)	16 (6.8%)	43 (18.2%)	119 (50.4%)	58 (24.6%)
Identifying patterns of student understandings or misconceptions (*n* = 236)	18 (7.6%)	42 (17.8%)	114 (48.3%)	62 (26.3%)
Using evidence of student progress on standards to modify subsequent instruction (*n* = 236)	13 (5.5%)	41 (17.4%)	105 (44.5%)	77 (32.6%)

T31. Please indicate the degree to which you agree or disagree with the statements below.

	Strongly disagree	Disagree	Agree	Strongly agree
Participating in LDC raised my expectations for students' writing. (*n* = 236)	11 (4.7%)	37 (15.7%)	121 (51.3%)	67 (28.4%)
Using LDC modules became an important part of my instructional practice. (*n* = 236)	16 (6.8%)	68 (28.8%)	116 (49.2%)	36 (15.3%)
Implementing LDC helped me incorporate my state's College- and Career-Ready Standards into my instruction. (*n* = 236)	11 (4.7%)	43 (18.2%)	137 (58.1%)	45 (19.1%)
LDC helped me incorporate writing assignments into my existing curriculum. (*n* = 236)	13 (5.5%)	32 (13.6%)	127 (53.8%)	64 (27.1%)
I am more likely to collaborate with other teachers on designing instruction after participating in our LDC Professional Learning Community. (*n* = 236)	11 (4.7%)	38 (16.1%)	128 (54.2%)	59 (25.0%)
LDC helped me improve on my teacher evaluation ratings. (*n* = 236)	19 (8.1%)	80 (33.9%)	99 (41.9%)	38 (16.1%)
Participating in LDC helped me develop working relationships with teachers in different grades and/or subjects. (*n* = 236)	13 (5.5%)	48 (20.3%)	117 (49.6%)	58 (24.6%)
I shared my LDC work with colleagues outside of the LDC PLC. (*n* = 236)	37 (15.7%)	79 (33.5%)	81 (34.3%)	39 (16.5%)

8   Impact on Student Learning

T32. Please indicate to what extent LDC had a positive effect on students in the following areas.

	Not at all	A little	Moderately	A great deal
Reading skills (*n* = 236)	21 (8.9%)	52 (22.0%)	110 (46.6%)	53 (22.5%)
Content knowledge (*n* = 236)	12 (5.1%)	38 (16.1%)	94 (39.8%)	92 (39.0%)
Ability to complete writing assignments (*n* = 236)	12 (5.1%)	34 (14.4%)	104 (44.1%)	86 (36.4%)
Quality of students' writing (*n* = 236)	15 (6.4%)	39 (16.5%)	102 (43.2%)	80 (33.9%)
College and career ready skills (*n* = 236)	22 (9.3%)	45 (19.1%)	101 (42.8%)	68 (28.8%)
Capacity to analyze and understand the components of a writing assignment (*n* = 236)	14 (5.9%)	41 (17.4%)	102 (43.2%)	79 (33.5%)
Speaking and listening skills (*n* = 236)	23 (9.7%)	51 (21.6%)	114 (48.3%)	48 (20.3%)
Overall literacy performance (*n* = 236)	17 (7.2%)	44 (18.6%)	116 (49.2%)	59 (25.0%)
Performance on assessments throughout the school year (*n* = 236)	22 (9.3%)	50 (21.2%)	118 (50.0%)	46 (19.5%)

9   Teacher Leader Support

The following question refers to the LDC teacher leader in your school. This is the teacher leading your Professional Learning Community work.

T33. Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly agree
Our school's LDC teacher leader effectively supported our Professional Learning Community meetings. (*n* = 196)	5 (2.6%)	2 (1.0%)	93 (47.4%)	96 (49.0%)
When I had questions about LDC, I felt comfortable approaching our school's teacher leader. (*n* = 196)	4 (2.0%)	4 (2.0%)	79 (40.3%)	109 (55.6%)
Our teacher leader helped teachers align LDC to broader school instructional goals. (*n* = 196)	6 (3.1%)	14 (7.1%)	84 (42.9%)	92 (46.9%)
Our teacher leader offered useful feedback for the design and revision of LDC modules. (*n* = 196)	6 (3.1%)	16 (8.2%)	86 (43.9%)	88 (44.9%)
Our teacher leader was effective in inviting teachers to join the LDC initiative. (*n* = 196)	4 (2.0%)	13 (6.6%)	88 (44.9%)	91 (46.4%)

10   School Administrator Support

The following questions refer to the school administrator who oversees the LDC project at your school.

T34. What proportion of PLC meetings focused on LDC did your school administrator attend?

(n=236)

- ☐ Less than one quarter of LDC PLCs   72 teachers (30.5%)
- ☐ About one quarter of LDC PLCs   31 teachers (13.1%)
- ☐ About one half of LDC PLCs   34 teachers (14.4%)
- ☐ About three quarters of LDC PLCs   21 teachers (8.9%)
- ☐ More than three quarters of LDC PLCs   78 teachers (33.1%)

T35. How many times did your school administrator observe you teach an LDC mini-task during the current school year (2017-18)?

(*n* = 236)

- ☐ 0 times   119 teachers (50.4%)
- ☐ 1 time   57 teachers (24.2%)
- ☐ 2 times   33 teachers (14.0%)
- ☐ 3 or more times   27 teachers (11.4%)

T36. Please indicate the degree to which you agree or disagree with the following statements.

My school administrator…	Strongly disagree	Disagree	Agree	Strongly agree
had a firm understanding of LDC. (*n* = 236)	11 (4.7%)	52 (22.0%)	129 (54.7%)	44 (18.6%)
allocated resources such as teacher time, payment, administrator time, support staff, sub coverage, etc., to ensure the LDC team could meet. (*n* = 236)	17 (7.2%)	44 (18.6%)	106 (44.9%)	69 (29.2%)
encouraged teachers to participate in LDC. (*n* = 236)	7 (3.0%)	19 (8.1%)	127 (53.8%)	83 (35.2%)
expressed concerns that implementing LDC is taking time away from other instructional priorities. (*n* = 236)	52 (22.0%)	97 (41.1%)	55 (23.3%)	32 (13.6%)
communicated how using LDC's tools supported specific school initiatives and/or goals. (*n* = 236)	14 (5.9%)	50 (21.2%)	122 (51.7%)	50 (21.2%)
provided me with feedback about my LDC planning and/or instruction. (*n* = 236)	37 (15.7%)	93 (39.4%)	78 (33.1%)	28 (11.9%)
made formative assessment a priority at my school. (*n* = 236)	21 (8.9%)	54 (22.9%)	118 (50.0%)	43 (18.2%)
used LDC to implement standards-driven assignments within existing curriculum. (*n* = 236)	25 (10.6%)	57 (24.2%)	108 (45.8%)	46 (19.5%)

11   Teacher Leadership Role

T37. Please indicate the degree to which you agree or disagree with the following statements about your role in your school's LDC implementation.

	Strongly disagree	Disagree	Agree	Strongly agree
I was involved in setting instructional goals for the LDC work at my school. (n=196)	16 (8.2%)	58 (29.6%)	96 (49.0%)	26 (13.3%)
I was involved in discussions about how to expand LDC implementation at my school in future years. (n=196)	23 (11.7%)	73 (37.2%)	77 (39.3%)	23 (11.7%)
I had the opportunity to work with our LDC teacher leader and our administrator to help shape LDC implementation. (n=196)	21 (10.7%)	76 (38.8%)	76 (38.8%)	23 (11.7%)
I am interested in learning more about how to lead LDC implementation at my school by facilitating with the virtual coach, providing feedback to my peers, etc. (n=196)	33 (16.8%)	61 (31.1%)	77 (39.3%)	25 (12.8%)

12 Facilitators and Barriers

T38. Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly agree
My LDC PLC was given sufficient time to meet. (*n* = 236)	17 (7.2%)	64 (27.1%)	112 (47.5%)	43 (18.2%)
I felt adequately prepared to effectively implement LDC modules in my classroom. (*n* = 236)	11 (4.7%)	54 (22.9%)	135 (57.2%)	36 (15.3%)
It was challenging to find content-rich reading materials for the LDC modules I developed. (*n* = 236)	17 (7.2%)	79 (33.5%)	102 (43.2%)	38 (16.1%)
My school had adequate technology to support teachers' use of LDC. (*n* = 236)	6 (2.5%)	24 (10.2%)	134 (56.8%)	72 (30.5%)
It was easy to find and adapt LDC mini-tasks for use in my classroom. (*n* = 236)	9 (3.8%)	54 (22.9%)	134 (56.8%)	39 (16.5%)

13 Areas for Improvement

There have been a number of supports for implementation of LDC in your school, including:

- CoreTools online platform
- LDC online courses in the "Learn" section of CoreTools
- Virtual coaching
    - Zoom meetings, written feedback on teacher work in LDC CoreTools, emails, etc.
- In-person coaching
    - Summer training, in-person support visits from LDC and District Lead, in-person professional development opportunities, etc.

T39. What supports did you find the most useful and why?

T40. What supports were not helpful and why?

T41. In what ways could LDC implementation be improved in your school in the future?

2017–2018
LDC Teacher Leader Survey

1	**LDC Participation**

TL1. Prior to the current school year (2017-18), did you have any experience with LDC?

$(n = 48)$

☐ Yes   15 liaisons (31.3%)

☐ No   ⬇ Skip toTL3   33 liaisons (68.8%)

TL2. How many of the following did you teach prior to the current school year (2017-18)?

☐ LDC modules $n = 15$, Mean = 1.73, Range: 0–7

☐ LDC mini-tasks, outside of modules $n = 15$, Mean = 1.73, Range: 0–10

Professional Learning Community and Teacher Collaboration

The following questions involve the LDC Professional Learning Community (PLC) that you are leading.

TL3. About how often did your LDC PLC meet?

(*n* = 48)

☐ Less than once a month — 0 liaisons (0.0%)

☐ Once a month — 5 liaisons (10.4%)

☐ Every other week — 35 liaisons (72.9%)

☐ Once a week — ⬇ Skip to TL5 — 8 liaisons (16.7%)

☐ Twice a week or more often — ⬇ Skip to TL5 — 0 liaisons (0.0%)

TL4. What were the primary barriers preventing your LDC PLC from meeting weekly? Select all that apply.

(*n* = 40)

☐ PLC time was not protected. — 9 liaisons (22.5%)

☐ PLC members had limited interest in attending meetings. — 6 liaisons (15.0%)

☐ School administrator did not make it a priority. — 6 liaisons (15.0%)

☐ I was unable to provide sufficient organizational support. — 0 liaisons (0.0%)

☐ Not enough teachers participated. — 3 liaisons (7.5%)

☐ PLC members had other priorities that competed with LDC participation. — 20 liaisons (50.0%)

☐ Other (please specify) _____ — 0 liaisons (0.0%)

TL5. About how often did you have informal discussions (as opposed to scheduled meetings) about LDC with teachers in your LDC PLC?

(*n* = 48)

☐ Less than once a month — 5 liaisons (10.4%)

☐ Once a month — 8 liaisons (16.7%)

☐ Every other week — 15 liaisons (31.3%)

☐ Once a week — 13 liaisons (27.1%)

☐ Twice a week or more — 7 liaisons (14.6%)

TL6. On average how long did your school's LDC PLC meetings typically last?

(*n* = 48)

☐ Less than 45 minutes   2 liaisons (4.2%)

☐ 45 to 59 minutes   29 liaisons (60.4%)

☐ 60 to 74 minutes   17 liaisons (35.4%)

☐ 75 minutes or more   0 liaisons (0.0%)

3	**Teacher Training and Support**

TL7. How effective was your LDC PLC in the following areas?

	Not effective	A little effective	Moderately effective	Very effective
Creating an environment in which teachers are comfortable working together (*n* = 47)	0 (0.0%)	0 (0.0%)	17 (36.2%)	30 (63.8%)
Fostering an environment where teachers share their instructional plans with colleagues (*n* = 47)	0 (0.0%)	3 (6.4%)	16 (34.0%)	28 (59.6%)
Allowing space to share student work (*n* = 47)	0 (0.0%)	4 (8.5%)	18 (38.3%)	25 (53.2%)
Helping teachers learn to improve their LDC instructional plans. (*n* = 47)	1 (2.1%)	4 (8.5%)	20 (42.6%)	22 (46.8%)

TL8. How would you rate each of the following aspects of the online course material (in the Learn tab in LDC CoreTools) that your coach used or directed you to use?

	Poor	Fair	Good	Excellent
Clarity of information presented (*n* = 47)	0 (0.0%)	7 (14.9%)	28 (59.6%)	12 (25.5%)
Relevance of information presented (*n* = 47)	0 (0.0%)	7 (14.9%)	22 (46.8%)	18 (38.3%)
Ease of use (*n* = 47)	1 (2.1%)	20 (42.6%)	18 (38.3%)	8 (17.0%)
Usefulness of resource documents (e.g., LDC Pitfall Checklist, CCSS Mental Markers, etc.) (*n* = 47)	0 (0.0%)	8 (17.0%)	22 (46.8%)	17 (36.2%)
Usefulness of videos (*n* = 47)	0 (0.0%)	12 (25.5%)	28 (59.6%)	7 (14.9%)
Degree to which course material helped teachers to create and/or adapt LDC modules (*n* = 47)	1 (2.1%)	6 (12.8%)	25 (53.2%)	15 (31.9%)
Opportunity to extend learning when needed or desired (*n* = 47)	2 (4.3%)	6 (12.8%)	22 (46.8%)	17 (36.2%)

TL9a. Overall, were you able to get the feedback and support you needed from your LDC coach (through written feedback in LDC CoreTools, or coaching and modeling in your LDC PLCs) to plan, teach, reflect on, and revise LDC modules?

(*n* = 47)

☐ Yes   47 liaisons (100%)

☐ No   0 liaisons (0.0%)

TL9b. Did your LDC coach provide written feedback on your module(s) in LDC CoreTools in a timely manner?

(*n* = 47)

☐ Yes   46 liaisons (97.9%)

☐ No   1 liaison (2.1%)

TL10. Outside of the PLC meetings with your LDC coach, please indicate whether you used each of the following types of coach support, and how helpful you found these types of support.

	Did not use	Used			
		Not helpful	A little helpful	Moderately helpful	Very helpful
Written feedback in LDC CoreTools from your LDC coach (in the comments areas and/or via the teacher work rubric) (*n* = 47)	6 (12.8%)	0 (0.0%)	2 (4.3%)	14 (29.8%)	25 (53.2%)
One-on-one Zoom video conference and/or call with your LDC coach (*n* = 47)	1 (2.1%)	0 (0.0%)	1 (2.1%)	14 (29.8%)	31 (66.0%)
Email or phone communication with your LDC coach (*n* = 47)	1 (2.1%)	0 (0.0%)	0 (0.0%)	9 (19.1%)	37 (78.7%)
Other (please specify) (*n* = 47)	35 (74.5%)	0 (0.0%)	0 (0.0%)	4 (8.5%)	8 (17.0%)

TL11. How many in-person and/or online LDC professional development offerings for school administrators and teacher leaders did you attend during the current school (e.g., Summer in-person launch days, Quarterly in-person teacher leader meetings, LDC monthly virtual coach meetings)?

Professional development offerings   *n* = 47, Mean = 5.85, Range: 0-20

| 4 | Support to Teacher Leader from LDC Coach |

TL12. **Please indicate the degree to which you agree or disagree with the following statements.**

	Strongly disagree	Disagree	Agree	Strongly agree	N/A
I was able to reach my LDC coach if I had any questions about LDC. (*n* = 47)	0 (0.0%)	2 (4.3%)	6 (12.8%)	38 (80.9%)	1 (2.1%)
LDC provided adequate technical support for issues with the CoreTools online platform. (*n* = 47)	0 (0.0%)	0 (0.0%)	21 (44.7%)	19 (40.4%)	7 (14.9%)
LDC offered sufficient professional development opportunities for me to lead the initiative in my school. (*n* = 47)	1 (2.1%)	4 (8.5%)	22 (46.8%)	20 (42.6%)	0 (0.0%)
LDC coaches were able to connect me with additional resources when needed. (*n* = 47)	0 (0.0%)	0 (0.0%)	20 (42.6%)	27 (57.4%)	0 (0.0%)
It was challenging to coordinate with our LDC coach on how to structure Professional Learning Community time. (*n* = 47)	14 (29.8%)	14 (29.8%)	9 (19.1%)	8 (17.0%)	2 (4.3%)
When I reached out to our LDC coach, he or she responded quickly. (*n* = 47)	0 (0.0%)	2 (2.1%)	12 (25.5%)	34 (72.3%)	0 (0.0%)
Our LDC coach was easy to work with. (*n* = 47)	0 (0.0%)	1 (2.1%)	7 (14.9%)	38 (80.9%)	1 (2.1%)
Our LDC coach was knowledgeable and provided high quality guidance. (*n* = 47)	0 (0.0%)	1 (2.1%)	8 (17.0%)	36 (76.6%)	2 (4.3%)

5 | Module Creation

TL13. During the current school year (2017-18), how many LDC modules did your PLC individually or collaboratively adapt from existing modules (e.g., modules created in a prior year and/or modules from the LDC Library in CoreTools)?

☐ Adapted modules   *n* = 47, Mean = 2.47, Range: 1-10

TL14. During the current school year (2017-18), how many LDC modules did your PLC create (either individually or in a group)? Only include modules built from scratch, not those adapted from existing modules in the LDC library.

☐ New modules   *n* = 47, Mean = 0.96, Range: 0-6

TL15. How did members of your PLC collaborate to create LDC modules? Check all that apply.

		(*n* = 47)
☐	Modules were created by individual teachers.	10 liaisons (21.3%)
☐	Modules were created by teams of two or more teachers.	27 liaisons (57.4%)
☐	Modules were created by the PLC as a whole.	11 liaisons (23.4%)
☐	Other (please specify) _____	9 liaisons (19.1%)

TL16. Please indicate to what extent you were able to do each of the following when creating LDC modules.

	Not at all	A little bit	To a moderate extent	To a great extent
Select focus standards for a writing assignment (*n* = 47)	0 (0.0%)	1 (2.1%)	15 (31.9%)	31 (66.0%)
Create a standards-driven writing assignment (*n* = 47)	0 (0.0%)	1 (2.1%)	17 (36.2%)	29 (61.7%)
Select high quality, complex texts and other materials to engage students in deeper learning (*n* = 47)	1 (2.1%)	4 (8.5%)	22 (46.8%)	20 (42.6%)
Identify the skills students need to develop to complete a writing assignment (*n* = 47)	0 (0.0%)	5 (10.6%)	17 (36.2%)	25 (53.2%)
Create daily lessons to teach the skills a student needs to complete a writing assignment (*n* = 47)	0 (0.0%)	10 (21.3%)	19 (40.4%)	18 (38.3%)
Differentiate instruction by incorporating multiple ways of thinking, various levels of complexity, and multiple modalities. (*n* = 47)	1 (2.1%)	8 (17.0%)	23 (48.9%)	15 (31.9%)
Plan for a variety of methods to assess student progress (e.g., rubrics and/or mini-task scoring guides) (*n* = 47)	2 (4.3%)	9 (19.1%)	22 (46.8%)	14 (29.8%)
Assess the quality of writing assignments and/or instructional plans using Peer Review/Curriculum Alignment Rubric (e.g. Task Pitfalls Checklist, rubric indicators) (*n* = 47)	0 (0.0%)	9 (19.1%)	20 (42.6%)	18 (38.3%)
Make a writing assignment relevant and engaging for students (*n* = 47)	0 (0.0%)	4 (8.5%)	20 (42.6%)	23 (48.9%)

6   Impact on Student Learning

TL17. Please indicate to what extent LDC had a positive effect on students in the following areas.

	Not at all	A little	Moderately	A great deal
Reading skills (*n* = 47)	2 (4.3%)	8 (17.0%)	18 (38.3%)	19 (40.3%)
Content knowledge (*n* = 47)	1 (2.1%)	4 (8.5%)	20 (42.6%)	22 (46.8%)
Ability to complete writing assignments (*n* = 47)	1 (2.1%)	4 (8.5%)	17 (36.2%)	25 (53.2%)
Quality of students' writing (*n* = 47)	1 (2.1%)	3 (6.4%)	21 (44.7%)	22 (46.8%)
College and career ready skills (*n* = 47)	1 (2.1%)	7 (14.9%)	22 (46.8%)	17 (36.2%)
Capacity to analyze and understand the components of a writing assignment (*n* = 47)	0 (0.0%)	5 (10.6%)	23 (48.9%)	19 (40.4%)
Speaking and listening skills (*n* = 47)	3 (6.4%)	7 (14.9%)	22 (46.8%)	15 (31.9%)
Overall literacy performance (*n* = 47)	1 (2.1%)	7 (14.9%)	20 (42.6%)	19 (40.4%)
Performance on assessments throughout the school year (*n* = 47)	2 (4.3%)	6 (12.8%)	23 (48.9%)	16 (34.0%)

7   School Administrator Support

The following questions refer to the school administrator who oversees the LDC project at your school.

TL18. What proportion of PLC meetings focused on LDC did your school administrator attend?

		(*n* = 47)
☐	Less than one quarter of LDC PLCs	14 liaisons (29.8%)
☐	About one quarter of LDC PLCs	7 liaisons (14.9%)
☐	About one half of LDC PLCs	8 liaisons (17.0%)
☐	About three quarters of LDC PLCs	3 liaisons (6.4%)
☐	More than three quarters of LDC PLCs	15 liaisons (31.9%)

TL19. Please indicate the degree to which you agree or disagree with the following statements.

My school administrator…	Strongly disagree	Disagree	Agree	Strongly agree
had a firm understanding of LDC. (*n* = 47)	1 (2.1%)	11 (23.4%)	24 (51.1%)	11 (23.4%)
allocated resources such as teacher time, payment, administrator time, support staff, sub coverage, etc., to ensure the LDC team could meet. (*n* = 47)	1 (2.1%)	10 (21.3%)	17 (36.2%)	19 (40.4%)
encouraged teachers to participate in LDC. (*n* = 47)	1 (2.1%)	4 (8.5%)	21 (44.7%)	21 (44.7%)
expressed concerns that implementing LDC is taking time away from other instructional priorities. (*n* = 47)	14 (29.8%)	25 (53.2%)	4 (8.5%)	4 (8.5%)
communicated how using LDC's tools supported specific school initiatives and/or goals. (*n* = 47)	3 (6.4%)	10 (21.3%)	22 (46.8%)	12 (25.5%)
provided me with feedback about my LDC planning and/or instruction. (*n* = 47)	4 (8.5%)	19 (40.4%)	18 (38.3%)	6 (12.8%)
made formative assessment a priority at my school. (*n* = 47)	2 (4.3%)	14 (29.8%)	21 (44.7%)	10 (21.3%)
Used LDC to implement standards-driven assignments within existing curriculum. (*n* = 47)	3 (6.4%)	14 (29.8%)	18 (38.3%)	12 (25.5%)

8   Teacher Leader Leadership Role

TL20. Please indicate the degree to which you agree or disagree with the following statements about your role in leading your school's LDC implementation.

	Strongly disagree	Disagree	Agree	Strongly agree
I met regularly with my school administrator to make planning decisions around LDC. (*n* = 47)	3 (6.4%)	12 (25.5%)	24 (51.1%)	8 (17.0%)
I was involved in discussions about differentiating LDC implementation to meet teacher learning needs. (*n* = 47)	2 (4.3%)	6 (12.8%)	29 (61.7%)	10 (21.3%)
I was involved in discussions about how to expand LDC implementation at my school in future years. (*n* = 47)	1 (2.1%)	10 (21.3%)	24 (51.1%)	12 (25.5%)
My role as an LDC teacher leader allowed me to effectively advocate for additional resources on my campus. (*n* = 47)	1 (2.1%)	13 (27.7%)	22 (46.8%)	11 (23.4%)
I was involved in adjusting the problems of practice that my school targeted with the LDC work. (*n* = 47)	1 (2.1%)	12 (25.5%)	25 (53.2%)	9 (19.1%)
I met regularly with my LDC coach to manage the LDC work plan. (*n* = 47)	1 (2.1%)	1 (2.1%)	27 (57.4%)	18 (38.3%)
I feel that my position as an LDC teacher leader allowed me to build my capacity as an instructional leader among my colleagues. (*n* = 47)	1 (2.1%)	2 (4.3%)	30 (63.8%)	14 (29.8%)
I am confident that I can lead our LDC PLC in the future without the assistance of an LDC coach. (*n* = 47)	3 (6.4%)	20 (42.6%)	20 (42.6%)	4 (8.5%)

9 | Alignment

TL21. Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly agree
Our school connected LDC implementation to our specific schoolwide goals. (*n* = 47)	2 (4.3%)	17 (36.2%)	17 (36.2%)	11 (23.4%)
LDC helped teachers create writing assignments to use within their current curricula. (*n* = 47)	1 (2.1%)	5 (10.6%)	27 (57.4%)	14 (29.8%)
LDC complemented other initiatives taking place in my school. (*n* = 47)	1 (2.1%)	10 (21.3%)	25 (53.2%)	11 (23.4%)
I view LDC as a strategy for implementing my state's College- and Career-Ready Standards. (*n* = 47)	1 (2.1%)	0 (0.0%)	31 (66.0%)	15 (31.9%)
The time spent implementing LDC interfered with other important initiatives at my school. (*n* = 47)	5 (10.6%)	18 (38.3%)	20 (42.6%)	4 (8.5%)
LDC helped prepare students in my school for current state assessments. (*n* = 47)	0 (0.0%)	5 (10.6%)	28 (59.6%)	14 (29.8%)
It was difficult for teachers to focus on LDC because of other competing priorities at the school. (*n* = 47)	1 (2.1%)	8 (17.0%)	24 (51.1%)	14 (29.8%)
Our instructional leaders are using LDC to implement standards-driven assignments within the existing curriculum. (*n* = 47)	1 (2.1%)	16 (34.0%)	20 (42.6%)	10 (21.3%)

TL22. Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly agree
I expect that most teachers participating in LDC this year will continue to do so next year. (*n* = 47)	2 (4.3%)	12 (25.5%)	22 (46.8%)	11 (23.4%)
Teachers at my school who were not part of the LDC PLC meetings used the LDC planning process and/or LDC CoreTools. (*n* = 47)	15 (31.9%)	21 (44.7%)	10 (21.3%)	1 (2.1%)
As a result of LDC, new collaborations across grades and/or subjects were created or are being launched at my school. (*n* = 47)	4 (8.5%)	19 (40.4%)	20 (42.6%)	4 (8.5%)
Teachers and administrators at my school are committed to sustaining the LDC initiative. (*n* = 47)	2 (4.3%)	12 (25.5%)	24 (51.1%)	9 (19.1%)
I expect our LDC PLC to increase in size next year. (*n* = 47)	3 (6.4%)	19 (40.4%)	21 (44.7%)	4 (8.5%)

11 District Support

TL23. Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly agree	Don't know
District leaders supported the implementation of LDC. (*n = 47*)	0 (0.0%)	4 (8.5%)	17 (36.2%)	8 (17.0%)	18 (38.3%)
District leaders had a firm understanding of LDC. (*n = 47*)	1 (2.1%)	5 (10.6%)	7 (14.9%)	9 (19.1%)	25 (53.2%)
District leaders are interested in spreading the use of LDC to additional schools. (*n = 47*)	0 (0.0%)	4 (8.5%)	8 (17.0%)	8 (17.0%)	27 (57.4%)
District professional development efforts were aligned with the LDC initiative. (*n = 47*)	2 (4.3%)	11 (23.4%)	13 (27.7%)	7 (14.9%)	14 (29.8%)
District leaders visited my school to discuss the implementation of LDC. (*n = 47*)	3 (6.4%)	15 (31.9%)	11 (23.4%)	6 (12.8%)	12 (25.5%)

12 Areas for Improvement

There have been a number of supports for implementation of LDC in your school, including:

- CoreTools online platform
- LDC online courses in the "Learn" section of CoreTools
- Virtual coaching
    - Zoom meetings, written feedback on teacher work in LDC CoreTools, emails, etc.
- In-person coaching
    - Summer training, in-person support visits from LDC and District Lead, in-person professional development opportunities, etc.

TL24. What supports did you find the most useful and why?

TL25. What supports were not helpful and why?

TL26. In what ways could LDC implementation be improved in your school in the future?

2017–2018
LDC School Administrator Survey

1   LDC Participation

A1. What is your role at the school?

(*n* = 34)

☐	Principal	24 admins (70.6%)
☐	Assistant Principal	6 admins (17.6%)
☐	Other (please specify) _____	4 admins (11.8%)

2   Professional Learning Community

A2. What proportion of LDC Professional Learning Community (PLC) meetings did you attend during the current school year?

(*n* = 34)

☐	Less than one quarter of LDC PLCs	7 admins (20.6%)
☐	About one quarter of LDC PLCs	6 admins (17.6%)
☐	About one half of LDC PLCs	9 admins (26.5%)
☐	About three quarters of LDC PLCs	3 admins (8.8%)
☐	More than three quarters of LDC PLCs	9 admins (26.5%)

A3. How many in-person and/or online LDC professional development offerings for school administrators and teacher leaders did you attend during the current school year (e.g., Summer launch meetings, quarterly in-person administrator meetings, monthly virtual LDC leadership meetings)?

☐ LDC Professional development offerings   *n* = 34, Mean = 5.26, Range: 0-20

A4. Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly agree	N/A
I was able to reach LDC staff when I had questions about LDC. (*n* = 34)	1 (2.9%)	0 (0.0%)	10 (29.4%)	22 (64.7%)	1 (2.9%)
My school has adequate technology to access LDC online resources. (*n* = 34)	0 (0.0%)	0 (0.0%)	11 (32.4%)	23 (67.6%)	0 (0.0%)
LDC offered sufficient professional development opportunities for LDC teacher leaders. (*n* = 34)	0 (0.0%)	1 (2.9%)	18 (52.9%)	15 (44.1%)	0 (0.0%)
LDC offered sufficient professional development opportunities for school administrators. (*n* = 34)	0 (0.0%)	2 (5.9%)	17 (50.0%)	15 (44.1%)	0 (0.0%)
LDC staff members were able to connect me with additional resources when needed. (*n* = 34)	0 (0.0%)	0 (0.0%)	15 (44.1%)	15 (44.1%)	4 (11.8%)

4   Classroom Observation

A5. On average, how many times during the school year did you observe each member of the LDC PLC teaching an LDC module?

(n = 34)

☐ 0 times	Skip to A7	5 admins (14.7%)
☐ 1 time		7 admins (20.6%)
☐ 2 times		10 admins (29.4%)
☐ 3 or more times		12 admins (35.3%)

A6. On average, how effective were LDC modules in developing students' literacy skills?

(n = 29)

☐ Not effective	0 admins (0.0%)
☐ A little effective	4 admins (13.8%)
☐ Moderately effective	17 admins (58.6%)
☐ Very effective	8 admins (27.6%)

A7. Based on your oversight of the LDC program, please indicate on average how much the teaching practice of LDC PLC members improved in each of the following areas:

	Not at all	A little	Moderately	A great deal
Selecting a set of focus standards for a writing assignment (*n* = 34)	0 (0.0%)	2 (5.9%)	16 (47.1%)	16 (47.1%)
Creating standards-driven writing assignments (*n* = 34)	0 (0.0%)	7 (20.6%)	12 (35.3%)	15 (44.1%)
Identifying the skills students need to develop to complete a writing assignment (*n* = 34)	0 (0.0%)	6 (17.6%)	17 (50.0%)	11 (32.4%)
Creating daily lessons to teach each skill a student needs to complete a writing assignment (*n* = 34)	0 (0.0%)	7 (20.6%)	22 (64.7%)	5 (14.7%)
Systematically collecting information on students' progress. (*n* = 34)	2 (5.9%)	11 (32.4%)	16 (47.1%)	5 (14.7%)
Identifying patterns of student understandings or misconceptions (*n* = 34)	2 (5.9%)	10 (29.4%)	18 (52.9%)	4 (11.8%)
Using evidence of student progress on standards to modify subsequent instruction (*n* = 34)	2 (5.9%)	8 (23.5%)	17 (50.0%)	7 (20.6%)

A8. Please indicate to what extent LDC had a positive effect on students in the following areas:

	Not at all	A little	Moderately	A great deal
Reading skills (*n* = 34)	1 (2.9%)	10 (29.4%)	17 (50.0%)	6 (17.6%)
Content knowledge (*n* = 34)	0 (0.0%)	7 (20.6%)	18 (52.9%)	9 (26.5%)
Ability to complete writing assignments (*n* = 34)	0 (0.0%)	6 (17.6%)	14 (41.2%)	14 (41.2%)
Quality of students' writing (*n* = 34)	0 (0.0%)	7 (20.6%)	15 (44.1%)	12 (35.3%)
College and career ready skills (*n* = 34)	0 (0.0%)	10 (29.4%)	18 (52.9%)	6 (17.6%)
Capacity to analyze and understand the components of a writing assignment (*n* = 34)	0 (0.0%)	7 (20.6%)	20 (58.8%)	7 (20.6%)
Speaking and listening skills (*n* = 34)	0 (0.0%)	10 (29.4%)	18 (52.9%)	6 (17.6%)
Overall literacy performance (*n* = 34)	0 (0.0%)	7 (20.6%)	20 (58.8%)	7 (20.6%)
Performance on assessments throughout the school year (*n* = 34)	0 (0.0%)	13 (38.2%)	15 (44.1%)	6 (17.6%)

A9. **Please indicate the degree to which you agree or disagree with the following statements about your role in leading LDC implementation in your school:**

	Strongly disagree	Disagree	Agree	Strongly agree
I was able to shape LDC implementation at my school. (*n* = 34)	0 (0.0%)	6 (17.6%)	26 (76.5%)	2 (5.9%)
I met regularly with the LDC teacher leader in my school to stay abreast of implementation progress. (*n* = 34)	0 (0.0%)	9 (26.5%)	20 (58.8%)	5 (14.7%)
I was involved in discussions about differentiating LDC implementation to meet teacher learning needs. (*n* = 34)	0 (0.0%)	11 (32.4%)	18 (52.9%)	5 (14.7%)
I led discussions about how to expand my school's LDC implementation in future years. (*n* = 34)	0 (0.0%)	10 (29.4%)	19 (55.9%)	5 (14.7%)
I made changes to school schedules to accommodate LDC professional learning time. (*n* = 34)	0 (0.0%)	4 (11.8%)	15 (44.1%)	15 (44.1%)
I allocated resources such as teacher time, payment, administrator time, support staff, sub coverage, etc., to ensure the LDC team could meet. (*n* = 34)	0 (0.0%)	3 (8.8%)	17 (50.0%)	14 (41.2%)

8   Alignment

A10. **Please indicate the degree to which you agree or disagree with the following statements:**

	Strongly disagree	Disagree	Agree	Strongly agree
Our school connected LDC implementation to our specific schoolwide goals. (*n* = 34)	0 (0.0%)	5 (14.7%)	25 (73.5%)	4 (11.8%)
LDC helped teachers create writing assignments to use within their current curricula. (*n* = 34)	0 (0.0%)	0 (0.0%)	26 (76.5%)	8 (23.5%)
LDC complemented other initiatives taking place in my school. (*n* = 34)	0 (0.0%)	0 (0.0%)	27 (79.4%)	7 (20.6%)
I view LDC as a strategy for implementing my state's College- and Career-Ready Standards. (*n* = 34)	0 (0.0%)	3 (8.8%)	24 (70.6%)	7 (20.6%)
The time spent implementing LDC interfered with other important initiatives at my school. (*n* = 34)	6 (17.6%)	17 (50.0%)	9 (26.5%)	2 (5.9%)
LDC helped prepare students in my school for current state assessments. (*n* = 34)	0 (0.0%)	3 (8.8%)	26 (76.5%)	5 (14.7%)
It was difficult for teachers to focus on LDC because of other competing priorities at the school. (*n* = 34)	1 (2.9%)	16 (47.1%)	15 (44.1%)	2 (5.9%)
I am using LDC to implement standards-driven assignments within the existing curriculum. (*n* = 34)	0 (0.0%)	2 (5.9%)	27 (79.4%)	5 (14.7%)
LDC helped improve teacher evaluation ratings. (*n* = 34)	2 (5.9%)	16 (47.1%)	13 (38.2%)	3 (8.8%)

9   Scale-up and Sustainability

A11. Please indicate the degree to which you agree or disagree with the following statements:

	Strongly disagree	Disagree	Agree	Strongly agree	Don't know
I expect that most teachers participating in LDC this year will continue to do so next year. (*n* = 34)	0 (0.0%)	0 (0.0%)	18 (52.9%)	16 (47.1%)	0 (0.0%)
Teachers at my school who were not part of the LDC PLC meetings used the LDC planning process and/or LDC CoreTools. (*n* = 34)	2 (5.9%)	25 (73.5%)	4 (11.8%)	2 (5.9%)	1 (2.9%)
As a result of LDC, new collaborations across grades and/or subjects were created or are being launched at my school. (*n* = 34)	0 (0.0%)	11 (32.4%)	18 (52.9%)	5 (14.7%)	0 (0.0%)
Teachers and administrators at my school are committed to sustaining the LDC initiative. (*n* = 34)	1 (2.9%)	1 (2.9%)	20 (58.8%)	11 (32.4%)	1 (2.9%)
I expect our LDC PLC to increase in size next year. (*n* = 34)	0 (0.0%)	13 (38.2%)	15 (44.1%)	5 (14.7%)	1 (2.9%)

A12. Please indicate the degree to which you agree or disagree with the following statements:

	Strongly disagree	Disagree	Agree	Strongly agree	Don't know
District leaders supported the implementation of LDC. (*n* = 34)	0 (0.0%)	5 (14.7%)	18 (52.9%)	4 (11.8%)	7 (20.6%)
District leaders had a firm understanding of LDC. (*n* = 34)	1 (2.9%)	9 (26.5%)	11 (32.4%)	2 (5.9%)	11 (32.4%)
District leaders are interested in spreading the use of LDC to additional schools. (*n* = 34)	0 (0.0%)	3 (8.8%)	11 (32.4%)	2 (5.9%)	18 (52.9%)
District professional development efforts were aligned with the LDC initiative. (*n* = 34)	1 (2.9%)	10 (29.4%)	13 (38.2%)	4 (11.8%)	6 (17.6%)
District leaders visited my school to discuss the implementation of LDC. (*n* = 34)	2 (5.9%)	14 (41.2%)	14 (41.2%)	2 (5.9%)	2 (5.9%)

There have been a number of supports for implementation of LDC in your school, including:

- *CoreTools online platform*
- *LDC online courses in the "Learn" section of CoreTools*
- *Virtual coaching*
  - o *Zoom meetings, written feedback on teacher work in LDC CoreTools, emails, etc.*
- *In-person coaching*
  - o *Summer training, in-person support visits from LDC and District Lead, in-person professional development opportunities, etc.*

A13. What supports did you find the most useful and why?

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A14. What supports were not helpful and why?

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A15. In what ways could LDC implementation be improved in your school in the future?

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Appendix D:
LDC Module Rating Dimensions

Each module was rated on six dimensions. All of these were rated using a 5-point scale. With the first five, anchor points ranged from not present or realized to fully present or realized. In contrast, the overall dimension ranged from inadequate to advanced.

Dimension **1**	**Effective Writing Task**

Definition

Degree to which teaching task makes effective use of the template task's writing mode (i.e., argumentation or explanation); requires sustained writing and effective use of ideas and evidence to substantiate claims; and is feasible for most students to complete (i.e., appropriate for the grade-level and subject matter).

Main Sources of Information

Module Creator Handout (Task)

- Read and evaluate the teaching task, student background/prior knowledge, and summary information.
- Evaluate the difficulty or ease students may encounter trying to answer the question.
- Compare module teaching task to teaching task template options.

Anchor Points	Description
5 Fully Present or Realized	The teaching task and performance expectations for the module are explicit and clear, require students to engage in higher-order thinking and writing, and are appropriate for the grade-level and subject matter.
4 Sufficiently Present or Realized	
3 Moderately Present or Realized	Clear module teaching task and performance expectations are available, but do not require students to engage in higher-order thinking and writing and/or are not appropriate for the grade-level and subject matter.
2 Barely Present or Realized	
1 Not Present or Realized	There is minimal evidence of an effort to identify an explicit and clear teaching task and performance expectations that provide opportunities for students to think critically and are appropriate for the grade-level and subject matter.

Dimension 2: Alignment to CCSS, Local, State Literacy and Content Standards

Definition

Extent to which module addresses content essential to the discipline, as well as reading comprehension and writing standards informed by local and state standards.

Main Sources of Information

Module Creator Handout (Task)

- Read and evaluate the standards included in the module.

- Module should include ELA as well as subject matter CCSS/state standards.

- Compare and contrast the standards the module includes with those that could have been included.

- Particular attention to content standards (CCSS History/Social Studies, Science, and Technical Subjects); State Standards; Specific Reading, Writing, Speaking/Listening, Language Skills

Anchor Points		Description
5	Fully Present or Realized	Module specifically addresses content essential to CCSS and local or state standards in science or social studies, as well as reading comprehension and writing. All standards are well aligned to the topic and teaching task.
4	Sufficiently Present or Realized	
3	Moderately Present or Realized	Module broadly addresses content essential to CCSS and local or state standards in science or social studies and reading comprehension and writing. Standards are sufficiently aligned to the topic and teaching task.
2	Barely Present or Realized	
1	Not Present or Realized	Minimal evidence that module addresses content essential to the discipline and literacy standards. Standards are poorly aligned to the topic and teaching task.

Fidelity to LDC Module Instruction

Definition

Degree to which module instruction, activities, and teaching task address each of the four stages of instructional practice (preparation for the task, reading process, transition to writing, writing process).

Main Sources of Information

Module Creator Handout (Instruction) and Information Sheet

- Evaluate for distribution of activities and time spent on each of the four stages of instructional practice.

Anchor Points	Description
5 Fully Present or Realized	The module instruction, activities, and teaching task reflect deliberate attention and fidelity to the four discrete stages of LDC module instruction. Classroom materials reflect demonstrable effort to develop instructional scaffolding within and across each stage of instruction.
4 Sufficiently Present or Realized	
3 Moderately Present or Realized	The module instruction, activities, and teaching task reflect moderate attention and fidelity to the four discrete stages of LDC module instruction. Classroom materials reflect sufficient effort to develop instructional scaffolding within and across each stage of instruction.
2 Barely Present or Realized	
1 Not Present or Realized	The module instruction, activities, and teaching task reflect poor attention and lack of fidelity to the four discrete stages of LDC module instruction. Classroom materials reflect inadequate effort to develop instructional scaffolding within and across each stage of instruction.

Quality Instructional Strategies

Definition

Degree to which the module provides clear instructional strategies aimed at helping students develop literacy skills and successfully complete the teaching task. In addition, the degree to which module instruction and activities scaffold critical thinking and performance in a way that is meaningful within the context of a given field or subject matter.

Main Sources of Information

Module Creator Handout (Instruction), Classroom Handouts, and Student Work

- Evaluate extent to which the module activities scaffold critical thinking and student performance within the context of the subject matter at the core of the teaching task.

- Evaluate extent to which instructional strategies guide student learning in literacy and ability to complete the teaching task.

Anchor Points	Description
5 Fully Present or Realized	Module provides clear and targeted instructional strategies and activities that scaffold student learning and promote critical thinking in social studies or science. There is explicit attention to helping students develop an accurate understanding of the topic and teaching task, and literacy skills necessary to complete the writing task successfully.
4 Sufficiently Present or Realized	
3 Moderately Present or Realized	Instructional strategies and activities are available to support adequate student learning and critical thinking in social studies or science. There is moderate attention to helping students develop an understanding of the topic and teaching task, and literacy skills necessary to complete the writing task.
2 Barely Present or Realized	
1 Not Present or Realized	Limited instructional strategies and activities are available to support student learning and critical thinking in social studies or science. Insufficient attention to helping students develop an understanding of the topic and teaching task, or literacy skills necessary to complete the writing task.

Coherence and Clarity of Module

Definition

The degree of logical alignment found between the teaching task and the goals of the module with the readings, mini-tasks, and instructional strategies.

Main Sources of Information

Module Creator Handout (Instruction), Classroom Handouts, and Student Work

Anchor Points	Description
5 Fully Present or Realized	Strong alignment between the teaching task and goals of the module—including the CCSS and local and state literacy and content standards—with the readings, mini-tasks, student work, and instructional strategies.
4 Sufficiently Present or Realized	
3 Moderately Present or Realized	Moderate alignment between the teaching task and goals of the module—including the CCSS and local and state literacy and content standards—with the readings, mini-tasks, student work, and instructional strategies.
2 Barely Present or Realized	
1 Not Present or Realized	Poor alignment between the teaching task and goals of the module—including the CCSS and local and state literacy and content standards—with the readings, mini-tasks, student work, and instructional strategies.

6 Overall Impression

Definition

A holistic assessment of the LDC Module.

Main Sources of Information

Module Creator Handout, Classroom Handouts, and Student Work

- To what extent does this module contribute to student college readiness and development of advanced literacy skills?

Anchor Points
5   Advanced LDC Module Implementation
4   Proficient LDC Module Implementation
3   Adequate LDC Module Implementation
2   Marginal LDC Module Implementation
1   Inadequate LDC Module Implementation

Appendix E:
Research Procedure and Results for Principal Interviews

To better understand teacher retention rates of LDC schools after the 2016–2017 school year, we conducted an interview study of school administrators. Twenty principals and assistant principals volunteered to be interviewed. This section presents the methods and results of the principal interviews.

Method

Instrument. We developed a six-question interview protocol for principals and assistant principals. Some of the interview questions had subquestions. Five of the questions were asked of all principals, regardless of their schools' retention typology, and one question (Question 5) differed slightly based on the school's retention typology. See Figure E1 for the interview protocol.

Question no.	Question	Given to
1	Why did you initially participate in LDC? • What were your goals when you signed on and how well have those goals been met thus far?	All
2	What was your role in LDC implementation? • Who else at the school supported LDC? • How much did you see of PLC meetings? • Was part of your role to give feedback on LDC instruction? (If needed: Who gave feedback on LDC instruction?)	All
3	Could you tell me about outside support – from both LDC and the district – and what worked or didn't work?	All
4	What were the incentives for teachers' participation in LDC? • How would you describe teacher buy-in and commitment to LDC? • Did teachers receive any additional pay? If so, for what?	All
5	What would you say are the main factors that led to not continuing with LDC?	Drop out
	a) Looking across the district, we noticed that some schools chose to continue with LDC for another year and others chose to stop. What would you say are the main factors that led to continuing with LDC? b) We noticed that none of the year-1 teachers participated in Year 2, so the year-2 PLC began with an entirely new set of teachers. Why do you think that was? c) Were there changes in implementation to keep this from happening again the following year?	Zero retention
	a) Looking across the district, we noticed that some schools chose to continue with LDC for another year and others chose to stop. What would you say are the main factors that led to continuing with LDC? b) We noticed that many teachers who participated in Year 1 did not participate in Year 2. Why do you think that was?	Very Low and Low Retention
	a) Looking across the district, we noticed that some schools chose to continue with LDC for another year and others chose to stop. What would you say are the main factors that led to continuing with LDC? b) We noticed that many teachers who participated in Year 1 continued into Year 2. Why do you think that was?	Moderate-High Retention
6	Do you have any advice for strengthening LDC or is there anything else we should know about your experience with LDC?	All

Figure E1. Principal and assistant principal interview protocol.

Participants. During the 2016–2017 school year, 48 total schools participated in the i3 LDC program including 28 in the New York City Department of Education (NYCDOE) and 20 in the

West Coast district which is the subject of this report. We categorized the schools into retention typologies based on a school's total teacher participants in 2016−2017 and returning teachers in 2017−2018. Using the proportions of the same teacher participating for the two years, we created five school retention typologies:

- drop out (the school has no teachers participating in LDC in 2017−2018);

- zero retention (no 2016−2017 teachers returning to LDC, but new teachers in the school are participating in 2017−2018);

- very low retention (less than 1/3 of teachers returning);

- low retention (between 1/3 and 2/3 returning teachers); and

- moderate to high retention (over 2/3 teachers returning).

Table E1 shows the number of schools per retention typology in NYCDOE and the West Coast district.

Table E1

Number of Schools and Proportion of Retention Typologies for NYCDOE and West Coast district in 2016−2017

Retention type	# NYCDOE schools	% NYCDOE schools	# West Coast district schools	% West Coast district schools
Dropped out after 2016−2017	10	36%	6	30%
Zero retention	1	4%	2	10%
Very low teacher retention	7	25%	3	15%
Low teacher retention	5	18%	2	10%
Moderate to high teacher retention	5	18%	7	35%
Total	**28**		**20**	

All LDC schools from the 2016−2017 cohort were contacted for a phone interview by email, and a total of 20 principals and assistant principals (10, or 36%, of NYCDOE schools and 10, or 50%, of West Coast district schools) participated in the interview. Table E2 shows the school retention typologies that are represented in this sample. Of the principals and assistant principals who participated in an interview, most were from very low teacher retention schools (eight participants), followed by moderate to high teacher retention schools (six participants). We also had three principals or assistant principals from drop out schools participate, two principals from low teacher retention schools, and one principal in a zero retention school.

Table E2

School Retention Typologies Represented in the Study

Retention Type	# NYCDOE schools	% NYCDOE schools	# West Coast district schools	% West Coast district schools
Dropped out after 2016–2017	2	20%	1	17%
Zero retention	0	0%	1	50%
Very low teacher retention	5	71%	3	100%
Low teacher retention	1	20%	1	50%
Moderate to high teacher retention	2	40%	4	57%
Total	10		10	

Procedures. We originally contacted principals of all schools except for schools designated as low retention. This was done as sampling strategy for a case study methodology to understand reasons behind high and low retention schools. Initial emails were sent to 41 schools in both districts (23 in NYCDOE and 18 in the West Coast district) the week of June 16, 2018. A minimum of three follow-up emails for nonresponding administrators were sent between June 25 and August 6, 2018. During this window, nine NYCDOE principals or assistant principals participated (39% of schools in the first round) and seven principals from the West Coast district participated (39% of schools in the first round). One West Coast district principal contacted us to say that she did not have enough knowledge about the LDC program in the school because she was the new principal.

Because of the low response rate, we decided to contact the principals in the low teacher retention schools (five in NYCDOE and two in the West Coast district) to increase the numbers of participants. The initial emails for these NYCDOE principals were sent on September 20, 2018, and for West Coast district principals, between October 1 and October 8, 2018. Follow-up emails were sent to NYCDOE and West Coast district principals between the weeks of October 1 and October 19, 2018. We also reached out to the LDC grant directors in NYCDOE and the West Coast district for recruitment support. Between the new round of emails and support from the LDC grant directors, four additional school leaders participated in interviews, bringing our total participants to 20 principals and assistant principals (10, or 36%, of NYCDOE schools and 10, or 50%, of West Coast district schools).

Interviews were scheduled at times most convenient to the principal or assistant principal. Interviews were conducted by two researchers following the protocol, and the interviews ranged from about eight minutes to 30 minutes in length. Participant consent was obtained prior to the interviews, and interviews were recorded.

Analysis. Recordings of interviews were transcribed. (For one interview, due to researcher and equipment error, the interview was not recorded. However, notes taken by the researcher during the interview were used for general counts in the analysis.) Transcriptions were read iteratively and coded for broad themes using grounded theory (Glaser & Strauss, 1967). Multiple close readings of each group transcript were conducted in order to summarize the data and identify themes related to reasons for a school's retention (or lack thereof) of teachers from Year 1 to Year 2 of LDC implementation. A coding scheme was developed based on targeted areas of interest in relation to reasons for retention.

Results

Qualitative results from the data are presented in five main categories: reasons for teachers continuing in LDC, meeting goals, administrator's role, teacher buy-in, and outside support.

Reasons for teachers continuing or leaving LDC in Year 2. To understand why teachers remained or left LDC after Year 1, interview data were coded into three main categories: teacher or grade-level decision, administrative decision, and mandatory participation. In teacher or grade-level decisions, individual teachers, a grade level, or a content-area team were free to decide to return the following year. Administrative decisions typically involved the principal deciding on changing the grade level or content-area teachers who would participate in the second year of implementation (e.g., moving from second-grade to third-grade teachers; dropping mathematics teachers but keeping science teachers in the program). A couple of principals also decided that LDC participation would be better suited for a particular level of teacher. For example, a principal decided to focus Year 2 teacher participation on "teachers that were new to the profession and teachers that were struggling instructionally"; therefore, only a few teachers continued from Year 1 to Year 2 at that site. Mandatory participation, which is based on an administrator's decision, reflected schools where teachers were told that participation in the second year of LDC was not voluntary. Table E3 shows the reasons for retention by school retention typology.

Table E3

Teachers' Participation in LDC in Year 2 by Retention Typology

Retention typology	Teacher/grade level decision	Administrative decision	Mandatory participation
Dropped out after 2016–2017	1	2	0
Zero retention	0	1	0
Very low teacher retention	4	4	0
Low teacher retention	1	0	1
Moderate to high teacher retention	4	0	2
Total	**10**	**7**	**3**

For the three drop out schools in our sample, two of the schools had a change in leadership. One had a new principal who came in before the second year of LDC implementation and decided not to participate in LDC, and the other school had a new superintendent who did not continue partnering with LDC. For the last of the three drop out schools, the small group of teachers who were in the first year of implementation decided not to continue because of "teacher and administrator burn out." This school had too many initiatives that were handled by a small number of administrative staff and the same teachers who were also part of the LDC implementation.

For the one zero retention school in our sample, the principal decided to change the teachers for Year 2. The grade level that was selected to participate in LDC the first year found the program successful, and so for Year 2, "other teachers haven't been exposed, and we wanted more teachers to have access … to spread the wealth within the school," so another grade level was selected to participate. In one of the low retention schools, the principal said that participation in LDC was mandatory, but many of the teachers who were part of Year 1 implementation left the school the following year.

For the 10 schools that were coded as a teacher/grade-level decision, half of those decisions were based on the grade-level or content-area team (e.g., science teachers) deciding to leave LDC because they started a new program or initiative the second year and did not have the time to participate in LDC. For the moderate to high teacher retention schools who were coded as teacher/grade-level decision, the majority of teachers in those schools decided to stay in LDC the second year.

Meeting goals. We asked participants their reasons for participating in LDC during the first year. The most popular reasons for participating in LDC were its alignment to standards and rigorous tasks. Principals and assistant principals also stated that they felt both teachers and students in their schools needed assignments where literacy instruction, the writing tasks, and the writing process were a focus. Other responses included wanting better lesson planning,

collaboration, and content-area instruction. Interestingly, three principals said that LDC appealed to them as they were new to the school or position.

After stating their reasons for participation, we asked if these goals were met after the first year of implementation. Table E4 shows participant responses to whether goals were met by school typology. The majority of principals and assistant principals responded positively: 12 (60%) said yes, five expressed mixed feelings about accomplishing their original goals for LDC (25%), and three said that their goals were not met (15%). From these responses, meeting goals for LDC did not appear to influence retention of teachers. For example, two of the three dropout schools reported meeting their LDC goals for participation, yet they didn't remain in the program. Teacher retention seemed to be tied more to teacher and principal decisions (see section above).

Table E4

Principal Reponses for LDC Goals by School Typology

	LDC goals met		
School typology	Yes	No	Mixed
Dropped out after 2016–2017	2	1	0
Zero retention	1	0	0
Very low teacher retention	4	1	3
Low teacher retention	1	1	0
Moderate to high teacher retention	4	0	2
Total	**12**	**3**	**5**

Administrator's role. The majority of principals and assistant principals in our sample reported having an active role in supporting LDC implementation. Sixteen (80%) attended LDC PLCs, and those who could not make the PLCs were able to get a summary of the meetings from their assistant principals or lead teachers. For those who were able to attend some PLCs, the amount of time they were able to sit in on the PLCs varied. Some principals were only able to drop in for a portion of the PLCs. For example, one principal (moderate to high retention school) said, "I would probably just go in the last 15 minutes. I don't think I was in a full session all the time. But I would touch bases and then each teacher would give me a wrap up summary of what they had done, what they were working on." Others were able to go to almost all PLCs. As the zero retention school principal said, "I was a participant, also, in the learning." Sixteen participants (80%) also reported that they gave feedback on LDC instruction. However, the degree to which principals or assistant principals gave feedback varied. Table E5 shows the numbers of participants who attended PLCs and provided feedback on LDC instruction.

Table E5

Participation of Principals and Assistant Principals in LDC Implementation by Retention Type

Retention typology	Attended PLCs	Provided feedback
Dropped out after 2016–2017	3	3
Zero retention	1	1
Very low teacher retention	6	6
Low teacher retention	1	2
Moderate to high teacher retention	5	4
Total	**16**	**16**

Teacher buy-in. Most of the principals and assistant principals mentioned increasing skills and knowledge, collaboration, and student achievement and accessing LDC materials as incentives for teachers. Besides these incentives that were actually part of the LDC implementation, a few schools were able to provide additional school-based supports. Eight schools (40%) in our sample reported providing teachers with more tangible incentives for their participation in LCD, such as additional pay and time, and four of the eight gave multiple incentives. Table E6 shows the number of these types of teacher incentives by school typology. No pattern emerges that connects teacher incentives to retention typology. However, it is notable that the majority of schools in the sample did not provide tangible incentives (i.e., pay, extra time, teacher evaluation) to teachers for their participation for LDC.

Table E6

Teacher Incentives by School Typology

Retention typology	Additional pay	Extra time	Teacher evaluation
Dropped out after 2016–2017	0	0	0
Zero retention	1	1	0
Very low teacher retention	2	0	1
Low teacher retention	1	2	0
Moderate to high teacher retention	1	1	1
Total	**5**	**4**	**2**

Five schools (25%) were able to pay teachers for their participation in LCD. Aside from pay, some principals were able to support participating teachers with extra time, such as adjusting the schedule to give teachers more time to meet during the week or giving teachers a

release day. For example, the principal from the zero retention school said, "Initially, it was kind of an imposition of time, but when we created extra time and space for the teachers to meet, they were appreciative. So they had more buy-in." Another principal (low retention school) said,

> I make it very easy for teachers, because I've built in time in their schedule for them to meet for LDC. There are no discrepancies in terms of when we should meet or how can we meet, or what needs to be done, which is usually the issue sometimes when it comes to work with outside consultants or providers, right?

Two schools incentivized participation through teacher evaluations. One principal (very low retention school) postponed teacher evaluations for the year. The other principal (moderate to high retention school) said, "I very much tied it to teacher performance and my expectation of what high quality planning looks like." For this principal, he knew LDC would be

> transformative. I knew that if they got through it and actually did it, the carrot would reveal itself in the students' performance. And I knew my teachers were committed; I knew they wanted our kids to do well. They just needed to be pushed through the process to see how to get the kids to do well.

Outside support. Overwhelmingly positive responses were reported from our sample regarding LDC support the schools received. All principals and assistant principals mentioned either training or coaching that LDC provided. Two principals, both from very low retention schools, also mentioned that the administrator meetings were helpful. As one principal described, "It gave an opportunity to speak to other people who were in the project, and it also gave an opportunity to actually go through all of the CoreTools that were there to support the teachers." Two principals (both from New York) also found site visits to another school helpful: "There are sites where the work is going on really nicely, and we were able to go over to those sites and see presentations from the principal and her teachers on how they have embedded this entire system into their daily program." Five participants mentioned district support being available.

Discussion

Participants in this study all reported playing an active role in LDC implementation at their school site, and most said that their goals for participation were met. They also overwhelmingly responded favorably to LDC support, and district support, if provided or perceived, was also helpful. The principal interviews showed the diversity of reasons for why schools were able to retain teachers, and they also show why teachers left. The main reason for teacher retention was teacher and grade-level team decisions to leave or stay, followed by the principals' decision to switch participation of teachers from Year 1 to Year 2. Teacher buy-in also seemed to affect teachers' decisions for remaining or continuing. We did not find any consistent trends for

retention typology; that is, we cannot characterize reasons for each retention typology and say, for example, all drop out schools had these characteristics or most moderate to high retention schools had other characteristics. Teacher retention in LDC from Year 1 to Year 2 was due to a myriad of factors that worked in combination at each school.

Appendix F:
Additional Results on Module Artifact Ratings

The following presents further details of the module analyses. First we present the methodology and results of the generalizability theory studies. This is followed by the additional tables for the descriptive analyses.

Generalizability Study

Generalizability theory is a statistical framework for examining multiple sources of potential error during the rating process. For each grade band, we first modeled variability in ratings across all six dimensions using a two-faceted design, whereby we estimated variance components for module by rater by dimension (t × r × d). The goal here was to separate true variation in the modules from other potential sources of measurement error. The main effects reflect true variation across modules ($\sigma^2 t$) and error variance across raters ($\sigma^2 r$) and dimensions ($\sigma^2 d$), while the error term ($\sigma^2 trd,e$) reflects unexplained residual error in the model. To disentangle the sources of potential error further, we also used a single-faceted design to examine potential error within the scoring of each dimension. As with the first set of models, the main effect reflects true variation across teachers ($\sigma^2 t$) and error variance across raters ($\sigma^2 r$).

Elementary module results. Generalizability theory models were conducted to examine potential error in the scoring process for the elementary modules. Tables F1 and F2 present results from the two-faceted and one-faceted models that examine error across and within dimensions. As we expected, most of the variation found for the elementary modules was due directly to differences in the modules (46%) or to differences in the modules by dimension (31%). Despite this, 16% of the variation was due either directly or through interaction with the raters, and 6% of the variation was unexplained by the two-faceted model used.

Table F1

Generalizability Study of the Elementary Module
Ratings Across Dimensions (n = 140)

Source	Var.	%
Module ($\sigma2t$)	0.45	46.13
Rater ($\sigma2r$)	0.08	8.10
Dimension ($\sigma2d$)	0.01	1.32
Module × Dimension ($\sigma2td$)	0.30	30.73
Rater × Dimension ($\sigma2rd$)	0.06	6.02
Module × Rater ($\sigma2tr$)	0.02	1.87
Error ($\sigma2trd,e$)	0.06	5.84

As previously mentioned, we also used a one-faceted design to disentangle variation in the ratings that was due either directly or through interaction with the dimensions (see Table F2). As would be desired, the greatest source of variation for each dimension was due directly to differences in the modules. Despite this, moderate amounts of variation could be attributed either directly or through interaction with the raters for Dimensions 3 through 6. For example, with Dimension 4, which measures the quality of instructional strategies, 28% of the variation was due to the raters and an additional 6% was due to an interaction between raters and modules. More than 25% of the variation in ratings for Dimension 6 was also attributable directly to the raters.

Table F2

Generalizability Study of the Elementary Module Ratings for Each Dimension (n = 140)

Dimension	Module ($\sigma2t$)		Rater ($\sigma2r$)		Module × Rater ($\sigma2tr$)		Error ($\sigma2trd,e$)	
	Var.	%	Var.	%	Var.	%	Var.	%
1. Effective writing task	0.50	87.80	0.03	5.38	0.04	6.82	0.00	0.00
2. Standards alignment	0.97	92.12	0.08	7.88	0.00	0.00	0.00	0.00
3. Fidelity to LDC instruction	0.75	73.72	0.04	3.49	0.23	22.79	0.00	0.00
4. Quality instructional strategies	0.75	66.19	0.31	27.72	0.07	6.09	0.00	0.00
5. Coherence/clarity of module	0.73	73.00	0.12	11.90	0.15	15.09	0.00	0.00
6. Overall impression	0.62	57.98	0.27	25.29	0.18	16.73	0.00	0.00

Secondary module results. Generalizability theory models were also used to examine potential error in the scoring process for the secondary modules. Tables F3 and F4 present results from the two-faceted and one-faceted models that examine error across and within dimensions. As would be the goal of any rating session, most of the variation found in the ratings was due directly to differences in the modules (42%) or to differences in the modules by dimension (48%). Furthermore, less than 3% of the variation for the secondary modules was due either directly or indirectly to the raters. What is of concern, though, is that 7% of the variation in ratings for the two-faceted model was unexplained.

Table F3

Generalizability Study of the Secondary Module Ratings Across Dimensions (n = 86)

Source	Var.	%
Module ($\sigma^2 t$)	0.48	41.98
Rater ($\sigma^2 r$)	0.02	2.10
Dimension ($\sigma^2 d$)	0.00	0.00
Module × Dimension ($\sigma^2 td$)	0.55	47.69
Rater × Dimension ($\sigma^2 rd$)	0.01	0.82
Module × Rater ($\sigma^2 tr$)	0.00	0.00
Error ($\sigma^2 trd,e$)	0.09	7.41

We also used a one-faceted design to disentangle the variance that was due either directly or through interaction with the dimensions (see Table F4). As would be desired, more than three quarters of the variance found for each dimension was attributable to differences in the modules. In general, only zero to 5% of the variance was due directly to the raters. The only exception involved coherence and clarity of the module (Dimension 5), in which 11% of the variation in ratings was due to the raters. Results were similar regarding the interaction between modules and raters, with very little variance found for the dimensions, except the first one that focuses on the effective writing task (23%). Finally, there was no unexplained error variance found for any of the one-faceted models.

Table F4

Generalizability Study of the Secondary Module Ratings for Each Dimension (n = 86)

Dimension	Module ($\sigma 2t$)		Rater ($\sigma 2r$)		Module × Rater ($\sigma 2tr$)		Error ($\sigma 2trd,e$)	
	Var.	%	Var.	%	Var.	%	Var.	%
1. Effective writing task	1.24	76.73	0.00	0.00	0.38	23.27	0.00	0.00
2. Standards alignment	1.06	97.29	0.03	2.71	0.00	0.00	0.00	0.00
3. Fidelity to LDC instruction	1.09	99.84	0.00	0.00	0.00	0.16	0.00	0.00
4. Quality instructional strategies	0.99	91.85	0.05	4.99	0.03	3.16	0.00	0.00
5. Coherence/clarity of module	1.02	88.34	0.12	10.74	0.01	0.92	0.00	0.00
6. Overall impression	0.88	95.06	0.05	4.94	0.00	0.00	0.00	0.00

Note. Negative estimates of variance were changed to zero in order to calculate percentages (see Shavelson & Webb, 1991).

Summary. As previously noted, generalizability models were fit for the overall samples for the two grade bands. As would be hoped for, when examining the one-faceted models, the majority of variation for the elementary and secondary ratings were due directly to differences in the modules (46%, 42%) or to differing quality in the modules across dimensions (31%, 48%). Likewise, results from the two-faceted models showed that the majority of variation within dimension was due to differences in the models (58% to 92%). Despite this, about one quarter of the variation for Dimension 4, which measures quality instructional strategies, and Dimension 6, which measures overall impression, was due directly to the raters. Similarly, almost one quarter of the variation in ratings for Dimension 3, which measures fidelity to LDC instruction, was due to an interaction between raters and modules.

Descriptive Results

The following section presents expanded descriptive results for both the primary and secondary modules. We first present background information about the modules rated. This is followed by descriptive statistics and percentages for the elementary modules and the secondary modules. Finally, we present further descriptive statistics and percentages for the exploratory analysis of elementary modules.

Table F5

West Coast District Modules—Background Variables for the Primary Module Analysis

Variables	Elementary		Secondary		Total	
	#	%	#	%	#	%
Cohort						
Cohort 1 returning	12	11.32	15	23.44	27	15.88
Cohort 1 new	11	10.38	7	10.94	18	10.59
Cohort 2	83	78.30	42	65.63	125	73.53
Subject						
ELA	43	40.57	28	43.75	71	41.76
Science	43	40.57	16	25.00	59	34.71
Social Studies	20	18.87	20	31.25	40	23.53
Module origin						
Adapted (Other authors)	68	64.15	38	59.38	106	62.35
Adapted (Same author)	31	29.25	20	31.25	51	30.00
Original	7	6.60	6	9.38	13	7.65
Author count						
Coauthored	44	41.51	20	31.25	64	37.65
Sole	62	58.49	44	68.75	106	62.35
Module type						
One week, one text	6	5.66	2	3.13	8	4.71
Regular	100	94.34	62	96.88	162	95.29
Module components						
Student background	89	83.96	46	71.88	135	79.41
Extension	45	42.45	18	28.13	63	37.06
Teacher reflection	31	29.25	23	35.94	54	31.76
Total	**106**	**62.35**	**64**	**37.65**	**170**	**100.00**

N*ote*. Teacher reflection counts calculated from the metadata.

Table F6

Descriptive Statistics for the Elementary Modules by Content Area

Dimension	*M*	*SD*	Median	Mode	Minimum	Maximum
ELA (*n* = 43)						
1. Effective writing task	4.19	0.79	4.00	5.00	3.00	5.00
2. Standards alignment	4.16	0.69	4.00	4.00	3.00	5.00
3. Fidelity to LDC instruction	3.86	1.23	4.00	4.00	1.00	5.00
4. Quality instructional strategies	3.86	1.01	4.00	4.00	1.00	5.00
5. Coherence/clarity of module	3.93	1.03	4.00	4.00	1.00	5.00
6. Overall impression	3.77	1.13	4.00	4.00	0.00	5.00
Science (*n* = 43)						
1. Effective writing task	4.54	0.74	5.00	5.00	2.00	5.00
2. Standards alignment	3.93	1.12	4.00	5.00	2.00	5.00
3. Fidelity to LDC instruction	4.47	0.91	5.00	5.00	1.00	5.00
4. Quality instructional strategies	4.56	0.88	5.00	5.00	1.00	5.00
5. Coherence/clarity of module	4.02	1.12	4.00	5.00	1.00	5.00
6. Overall impression	4.30	0.86	5.00	5.00	2.00	5.00
Social studies (*n* = 20)						
1. Effective writing task	4.30	0.73	4.00	5.00	3.00	5.00
2. Standards alignment	3.95	0.69	4.00	4.00	2.00	5.00
3. Fidelity to LDC instruction	4.05	0.89	4.00	4.00	2.00	5.00
4. Quality instructional strategies	3.60	1.10	4.00	4.00	1.00	5.00
5. Coherence/clarity of module	3.70	0.80	4.00	4.00	2.00	5.00
6. Overall impression	3.55	1.10	4.00	3.00	0.00	5.00
Overall (*n* = 106)						
1. Effective writing task	4.35	0.77	5.00	5.00	2.00	5.00
2. Standards alignment	4.03	0.89	4.00	4.00	2.00	5.00
3. Fidelity to LDC instruction	4.14	1.07	4.00	5.00	1.00	5.00
4. Quality instructional strategies	4.09	1.05	4.00	5.00	1.00	5.00
5. Coherence/clarity of module	3.93	1.03	4.00	5.00	1.00	5.00
6. Overall impression	3.94	1.06	4.00	5.00	0.00	5.00

Table F7

Distribution (Percentage) of Ratings for the Elementary Modules by Content Area

Dimension	1	2	3	4	5
ELA (*n* = 43)					
1. Effective writing task	0.00	0.00	23.26	34.88	41.86
2. Standards alignment	0.00	0.00	16.28	51.16	32.56
3. Fidelity to LDC instruction	9.30	4.65	11.63	39.53	34.88
4. Quality instructional strategies	2.33	6.98	23.26	37.21	30.23
5. Coherence/clarity of module	2.33	6.98	20.93	34.88	34.88
6. Overall impression	0.00	11.63	18.60	39.53	27.91
Science (*n* = 43)					
1. Effective writing task	0.00	2.33	6.98	25.58	65.12
2. Standards alignment	0.00	16.28	16.28	25.58	41.86
3. Fidelity to LDC instruction	2.33	0.00	13.95	16.28	67.44
4. Quality instructional strategies	2.33	2.33	4.65	18.60	72.09
5. Coherence/clarity of module	2.33	9.30	18.60	23.26	46.51
6. Overall impression	0.00	2.33	18.60	25.58	53.49
Social studies (*n* = 20)					
1. Effective writing task	0.00	0.00	15.00	40.00	45.00
2. Standards alignment	0.00	5.00	10.00	70.00	15.00
3. Fidelity to LDC instruction	0.00	5.00	20.00	40.00	35.00
4. Quality instructional strategies	5.00	10.00	25.00	40.00	20.00
5. Coherence/clarity of module	0.00	5.00	35.00	45.00	15.00
6. Overall impression	0.00	0.00	40.00	40.00	15.00
Overall (*n* = 106)					
1. Effective writing task	0.00	0.94	15.09	32.08	51.89
2. Standards alignment	0.00	7.55	15.09	44.34	33.02
3. Fidelity to LDC instruction	4.72	2.83	14.15	30.19	48.11
4. Quality instructional strategies	2.83	5.66	16.04	30.19	45.28
5. Coherence/clarity of module	1.89	7.55	22.64	32.08	35.85
6. Overall impression	0.00	5.66	22.64	33.96	35.85

Table F8

Descriptive Statistics for the Elementary Modules by Cohort

Dimension	*M*	*SD*	Median	Mode	Minimum	Maximum
Cohort 1 returning (*n* = 12)						
1. Effective writing task	3.67	0.49	4.00	4.00	3.00	4.00
2. Standards alignment	3.75	0.97	4.00	3.00	2.00	5.00
3. Fidelity to LDC instruction	3.75	1.06	4.00	4.00	2.00	5.00
4. Quality instructional strategies	3.25	1.14	3.50	4.00	1.00	5.00
5. Coherence/clarity of module	3.33	1.07	3.00	3.00	2.00	5.00
6. Overall impression	3.17	1.11	3.00	3.00	0.00	4.00
Cohort 1 new (*n* = 11)						
1. Effective writing task	4.36	0.92	5.00	5.00	3.00	5.00
2. Standards alignment	4.27	0.90	4.00	4.00	2.00	5.00
3. Fidelity to LDC instruction	4.00	1.61	5.00	5.00	1.00	5.00
4. Quality instructional strategies	4.18	1.33	5.00	5.00	1.00	5.00
5. Coherence/clarity of module	4.09	1.38	5.00	5.00	1.00	5.00
6. Overall impression	4.18	1.25	5.00	5.00	2.00	5.00
Cohort 2 (*n* = 83)						
1. Effective writing task	4.45	0.74	5.00	5.00	2.00	5.00
2. Standards alignment	4.04	0.88	4.00	4.00	2.00	5.00
3. Fidelity to LDC instruction	4.22	0.99	4.00	5.00	1.00	5.00
4. Quality instructional strategies	4.21	0.95	4.00	5.00	1.00	5.00
5. Coherence/clarity of module	3.99	0.96	4.00	4.00	1.00	5.00
6. Overall impression	4.02	0.99	4.00	5.00	0.00	5.00
Overall (*n* = 106)						
1. Effective writing task	4.35	0.77	5.00	5.00	2.00	5.00
2. Standards alignment	4.03	0.89	4.00	4.00	2.00	5.00
3. Fidelity to LDC instruction	4.14	1.07	4.00	5.00	1.00	5.00
4. Quality instructional strategies	4.09	1.05	4.00	5.00	1.00	5.00
5. Coherence/clarity of module	3.93	1.03	4.00	5.00	1.00	5.00
6. Overall impression	3.94	1.06	4.00	5.00	0.00	5.00

Table F9

Distribution (Percentage) of Ratings for the Elementary Modules by Cohort

Dimension	1	2	3	4	5
Cohort 1 returning (*n* = 12)					
1. Effective writing task	0.00	0.00	33.33	66.67	0.00
2. Standards alignment	0.00	8.33	33.33	33.33	25.00
3. Fidelity to LDC instruction	0.00	16.67	16.67	41.67	25.00
4. Quality instructional strategies	8.33	16.67	25.00	41.67	8.33
5. Coherence/clarity of module	0.00	25.00	33.33	25.00	16.67
6. Overall impression	0.00	0.00	50.00	41.67	0.00
Cohort 1 new (*n* = 11)					
1. Effective writing task	0.00	0.00	27.27	9.09	63.64
2. Standards alignment	0.00	9.09	0.00	45.45	45.45
3. Fidelity to LDC instruction	18.18	0.00	9.09	9.09	63.64
4. Quality instructional strategies	9.09	0.00	18.18	9.09	63.64
5. Coherence/clarity of module	9.09	0.00	27.27	0.00	63.64
6. Overall impression	0.00	18.18	9.09	9.09	63.64
Cohort 2 (*n* = 83)					
1. Effective writing task	0.00	1.20	10.84	30.12	57.83
2. Standards alignment	0.00	7.23	14.46	45.78	32.53
3. Fidelity to LDC instruction	3.61	1.20	14.46	31.33	49.40
4. Quality instructional strategies	1.20	4.82	14.46	31.33	48.19
5. Coherence/clarity of module	1.20	6.02	20.48	37.35	34.94
6. Overall impression	0.00	4.82	20.48	36.14	37.35
Overall (*n* = 106)					
1. Effective writing task	0.00	0.94	15.09	32.08	51.89
2. Standards alignment	0.00	7.55	15.09	44.34	33.02
3. Fidelity to LDC instruction	4.72	2.83	14.15	30.19	48.11
4. Quality instructional strategies	2.83	5.66	16.04	30.19	45.28
5. Coherence/clarity of module	1.89	7.55	22.64	32.08	35.85
6. Overall impression	0.00	5.66	22.64	33.96	35.85

Table F10

Descriptive Statistics for the Secondary Modules by Content Area

Dimension	*M*	*SD*	Median	Mode	Minimum	Maximum
ELA (*n* = 28)						
1. Effective writing task	3.54	1.20	4.00	3.00	1.00	5.00
2. Standards alignment	3.54	0.92	3.50	3.00	1.00	5.00
3. Fidelity to LDC instruction	3.68	1.22	4.00	4.00	1.00	5.00
4. Quality instructional strategies	4.00	1.15	4.00	5.00	1.00	5.00
5. Coherence/clarity of module	4.11	0.92	4.00	4.00	1.00	5.00
6. Overall impression	3.86	0.93	4.00	4.00	1.00	5.00
Science (*n* = 16)						
1. Effective writing task	3.56	0.89	4.00	4.00	2.00	5.00
2. Standards alignment	3.25	1.24	3.50	2.00	2.00	5.00
3. Fidelity to LDC instruction	3.56	1.03	3.50	3.00	1.00	5.00
4. Quality instructional strategies	3.38	1.09	3.50	4.00	1.00	5.00
5. Coherence/clarity of module	3.13	1.31	3.50	4.00	1.00	5.00
6. Overall impression	3.31	1.08	3.50	4.00	2.00	5.00
Social studies (*n* = 20)						
1. Effective writing task	3.35	1.63	3.00	5.00	1.00	5.00
2. Standards alignment	3.55	0.83	3.00	3.00	2.00	5.00
3. Fidelity to LDC instruction	3.65	0.75	4.00	4.00	2.00	5.00
4. Quality instructional strategies	3.70	0.66	4.00	4.00	3.00	5.00
5. Coherence/clarity of module	3.75	1.12	4.00	4.00	0.00	5.00
6. Overall impression	3.75	0.55	4.00	4.00	3.00	5.00
Overall (*n* = 64)						
1. Effective writing task	3.48	1.27	4.00	3.00	1.00	5.00
2. Standards alignment	3.47	0.98	3.00	3.00	1.00	5.00
3. Fidelity to LDC instruction	3.64	1.03	4.00	4.00	1.00	5.00
4. Quality instructional strategies	3.75	1.02	4.00	4.00	1.00	5.00
5. Coherence/clarity of module	3.75	1.14	4.00	4.00	0.00	5.00
6. Overall impression	3.69	0.89	4.00	4.00	1.00	5.00

Table F11

Distribution (Percentage) of Ratings for the Secondary Modules by Content Area

Dimension	1	2	3	4	5
ELA (*n* = 28)					
1. Effective writing task	7.14	10.71	28.57	28.57	25.00
2. Standards alignment	3.57	3.57	42.86	35.71	14.29
3. Fidelity to LDC instruction	10.71	3.57	17.86	42.86	25.00
4. Quality instructional strategies	7.14	0.00	21.43	28.57	42.86
5. Coherence/clarity of module	3.57	0.00	14.29	46.43	35.71
6. Overall impression	3.57	3.57	17.86	53.57	21.43
Science (*n* = 16)					
1. Effective writing task	0.00	12.50	31.25	43.75	12.50
2. Standards alignment	0.00	43.75	6.25	31.25	18.75
3. Fidelity to LDC instruction	6.25	0.00	43.75	31.25	18.75
4. Quality instructional strategies	6.25	12.50	31.25	37.50	12.50
5. Coherence/clarity of module	12.50	25.00	12.50	37.50	12.50
6. Overall impression	0.00	31.25	18.75	37.50	12.50
Social studies (*n* = 20)					
1. Effective writing task	25.00	0.00	30.00	5.00	40.00
2. Standards alignment	0.00	5.00	50.00	30.00	15.00
3. Fidelity to LDC instruction	0.00	5.00	35.00	50.00	10.00
4. Quality instructional strategies	0.00	0.00	40.00	50.00	10.00
5. Coherence/clarity of module	0.00	0.00	25.00	50.00	20.00
6. Overall impression	0.00	0.00	30.00	65.00	5.00
Overall (*n* = 64)					
1. Effective writing task	10.94	7.81	29.69	25.00	26.56
2. Standards alignment	1.56	14.06	35.94	32.81	15.63
3. Fidelity to LDC instruction	6.25	3.13	29.69	42.19	18.75
4. Quality instructional strategies	4.69	3.13	29.69	37.50	25.00
5. Coherence/clarity of module	4.69	6.25	17.19	45.31	25.00
6. Overall impression	1.56	9.38	21.88	53.13	14.06

Table F12

Descriptive Statistics for the Secondary Modules by Cohort

Dimension	M	SD	Median	Mode	Minimum	Maximum
Cohort 1 returning (*n* = 15)						
1. Effective writing task	3.67	1.23	4.00	3.00	1.00	5.00
2. Standards alignment	3.80	0.94	4.00	3.00	2.00	5.00
3. Fidelity to LDC instruction	3.40	1.06	4.00	4.00	1.00	4.00
4. Quality instructional strategies	3.87	1.06	4.00	4.00	2.00	5.00
5. Coherence/clarity of module	3.87	1.19	4.00	4.00	1.00	5.00
6. Overall impression	3.87	0.83	4.00	4.00	2.00	5.00
Cohort 1 new (*n* = 7)						
1. Effective writing task	4.71	0.49	5.00	5.00	4.00	5.00
2. Standards alignment	4.14	0.69	4.00	4.00	3.00	5.00
3. Fidelity to LDC instruction	4.14	0.90	4.00	5.00	3.00	5.00
4. Quality instructional strategies	4.14	0.69	4.00	4.00	3.00	5.00
5. Coherence/clarity of module	4.00	1.83	5.00	5.00	0.00	5.00
6. Overall impression	4.29	0.49	4.00	4.00	4.00	5.00
Cohort 2 (*n* = 42)						
1. Effective writing task	3.21	1.26	3.00	3.00	1.00	5.00
2. Standards alignment	3.24	0.96	3.00	3.00	1.00	5.00
3. Fidelity to LDC instruction	3.64	1.03	4.00	4.00	1.00	5.00
4. Quality instructional strategies	3.64	1.06	4.00	3.00	1.00	5.00
5. Coherence/clarity of module	3.67	1.00	4.00	4.00	1.00	5.00
6. Overall impression	3.52	0.92	4.00	4.00	1.00	5.00
Overall (*n* = 64)						
1. Effective writing task	3.48	1.27	4.00	3.00	1.00	5.00
2. Standards alignment	3.47	0.98	3.00	3.00	1.00	5.00
3. Fidelity to LDC instruction	3.64	1.03	4.00	4.00	1.00	5.00
4. Quality instructional strategies	3.75	1.02	4.00	4.00	1.00	5.00
5. Coherence/clarity of module	3.75	1.14	4.00	4.00	0.00	5.00
6. Overall impression	3.69	0.89	4.00	4.00	1.00	5.00

Table F13

Distribution (Percentage) of Ratings for the Secondary Modules by Cohort

Dimension	1	2	3	4	5
Cohort 1 returning (*n* = 15)					
1. Effective writing task	6.67	6.67	33.33	20.00	33.33
2. Standards alignment	0.00	6.67	33.33	33.33	26.67
3. Fidelity to LDC instruction	13.33	0.00	20.00	66.67	0.00
4. Quality instructional strategies	0.00	13.33	20.00	33.33	33.33
5. Coherence/clarity of module	6.67	6.67	13.33	40.00	33.33
6. Overall impression	0.00	6.67	20.00	53.33	20.00
Cohort 1 new (*n* = 7)					
1. Effective writing task	0.00	0.00	0.00	28.57	71.43
2. Standards alignment	0.00	0.00	14.29	57.14	28.57
3. Fidelity to LDC instruction	0.00	0.00	28.57	28.57	42.86
4. Quality instructional strategies	0.00	0.00	14.29	57.14	28.57
5. Coherence/clarity of module	0.00	0.00	0.00	28.57	57.14
6. Overall impression	0.00	0.00	0.00	85.71	28.57
Cohort 2 (*n* = 42)					
1. Effective writing task	14.29	9.52	33.33	26.19	16.67
2. Standards alignment	2.38	19.05	40.48	28.57	9.52
3. Fidelity to LDC instruction	4.76	4.76	33.33	35.71	21.43
4. Quality instructional strategies	7.14	0.00	35.71	35.71	21.43
5. Coherence/clarity of module	4.76	7.14	21.43	50.00	16.67
6. Overall impression	2.38	11.90	26.19	50.00	9.52
Overall (*n* = 64)					
1. Effective writing task	10.94	7.81	29.69	25.00	26.56
2. Standards alignment	1.56	14.06	35.94	32.81	15.63
3. Fidelity to LDC instruction	6.25	3.13	29.69	42.19	18.75
4. Quality instructional strategies	4.69	3.13	29.69	37.50	25.00
5. Coherence/clarity of module	4.69	6.25	17.19	45.31	25.00
6. Overall impression	1.56	9.38	21.88	53.13	14.06

Table F14

Descriptive Statistics for the Exploratory Analysis of Elementary Modules

Dimension	*M*	*SD*	Median	Mode	Minimum	Maximum
2016–2017 (*n* = 7)						
1. Effective writing task	3.43	1.40	4.00	2.00	2.00	5.00
2. Standards alignment	3.00	1.00	3.00	3.00	2.00	5.00
3. Fidelity to LDC instruction	3.43	1.40	4.00	2.00	2.00	5.00
4. Quality instructional strategies	3.43	1.40	4.00	2.00	2.00	5.00
5. Coherence/clarity of module	3.86	0.90	4.00	3.00	3.00	5.00
6. Overall impression	3.43	1.40	4.00	2.00	2.00	5.00
2017–2018 (*n* = 7)						
1. Effective writing task	3.86	0.38	4.00	4.00	3.00	4.00
2. Standards alignment	4.14	0.69	4.00	4.00	3.00	5.00
3. Fidelity to LDC instruction	4.14	1.07	4.00	4.00	2.00	5.00
4. Quality instructional strategies	3.14	1.46	4.00	4.00	1.00	5.00
5. Coherence/clarity of module	3.71	1.11	4.00	3.00	2.00	5.00
6. Overall impression	3.14	1.46	4.00	4.00	0.00	4.00

Table F15

Distribution (Percentage) of Ratings for the Exploratory Analysis of Elementary Modules

Dimension	1	2	3	4	5
2016–2017 (*n* = 7)					
1. Effective writing task	0.00	42.86	0.00	28.57	28.57
2. Standards alignment	0.00	28.57	57.14	0.00	14.29
3. Fidelity to LDC instruction	0.00	42.86	0.00	28.57	28.57
4. Quality instructional strategies	0.00	42.86	0.00	42.86	28.57
5. Coherence/clarity of module	0.00	0.00	42.86	28.57	28.57
6. Overall impression	0.00	42.86	0.00	28.57	28.57
2017–2018 (*n* = 7)					
1. Effective writing task	0.00	0.00	14.29	85.71	0.00
2. Standards alignment	0.00	0.00	14.29	57.14	28.57
3. Fidelity to LDC instruction	0.00	14.29	0.00	42.86	42.86
4. Quality instructional strategies	14.29	28.57	0.00	42.86	14.29
5. Coherence/clarity of module	0.00	14.29	28.57	28.57	28.57
6. Overall impression	0.00	0.00	28.57	57.14	0.00

Appendix G:
Fidelity Matrix

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
1. Key Component = Common Planning time for LDC Professional Learning Community with Synchronous Coach Support										
Teacher Attendance at weekly PLC meetings	Expectation that PLC teachers will regularly attend PLC meetings.	Teacher	PLC Reflection form will include attendance record for both coach-facilitated and teacher leader-facilitated PLC meetings	Reflection form will be filled out by Teacher Leader for each weekly PLC session. LDC will deliver attendance data to CRESST twice per year.	0 (very low) = less than 70% attendance at PLC sessions 1 (low) = 70-79% attendance at PLC sessions 2 (moderate) = 80-89% attendance at PLC sessions 3 (ideal) = at least 90% attendance at PLC sessions	Adequate implementation at teacher level is score of 2	School-level: 0 (very low) = less than 65% of PLC teachers in school with score of 2 1 (low) = 65% to <75% of PLC teachers in school with score of 2 2 (moderate) = 75-85% of PLC teachers in school with score of 2 3 (high) = over 85% of PLC teachers in school with score of 2 Adequate implementation at school level is score of 2.	Sample-level 0= < 25% schools with **score ≥ 2** 1 = 26-50% schools with **score ≥ 2** 2 = 51-75% schools with **score ≥ 2** 3 = > 75% schools with **score ≥ 2** Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Amount of time spent on LDC during common planning time	PLCs expected to spend at least 60 minutes per PLC meeting where the coach joins.	School	PLC reflection form	Teacher Leader will note time spent on LDC in the same reflection form that captures attendance. Data delivered to CRESST twice per year.	0 (low) = modal* response of under 45 minutes per push-in session 1 (moderate) = modal response of 45-59 minutes per push-in session 2 (high) = modal response of 60-74 minutes per push-in session 3 (ideal) = modal response of 75-90 minutes per push-in session *if there is more than one modal response, the highest modal response will be used.	Adequate implementation at school level is score of 2		Sample level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Exposure to LDC LEARN content during first instructional cycle	Coaches are expected to use Instructional Cycles in their biweekly digital push-in sessions with the PLCs.	Teacher	CoreTools Data	Users view Instructional Cycle sessions during coach push-in sessions. Data delivered to CRESST twice per year.	0 (very low) = teacher views less than 50% of sessions in the Instructional Cycle 1 (low) = teacher views between 50% and less than 60% of sessions in the Instructional Cycle 2 (moderate) teacher views between 60% and less than 70% of sessions in the Instructional Cycle 3 (high) teacher views 70% or more of sessions in the Instructional Cycle	Adequate implementation at school level is score of 2.	School-level: 0 (very low) = less than 65% of PLC teachers in school with score of 2 1 (low) = 65% to <75% of PLC teachers in school with score of 2 2 (moderate) = 75-85% of PLC teachers in school with score of 2 3 (high) = over 85% of PLC teachers in school with score of 2 Adequate implementation at school level is score of 2.	Sample level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Exposure to LDC LEARN content during second instructional cycle	Coaches are expected to use Instructional Cycles in their biweekly digital push-in sessions with the PLCs.	Teacher	CoreTools Data	Users view Instructional Cycle sessions during coach push-in sessions. Data delivered to CRESST twice per year.	0 (very low) = teacher views less than 50% of sessions in the Instructional Cycle 1 (low) = teacher views between 50% and less than 60% of sessions in the Instructional Cycle 2 (moderate) teacher views between 60% and less than 70% of sessions in the Instructional Cycle 3 (high) teacher views 70% or more of sessions in the Instructional Cycle	Adequate implementation at school level is score of 2.	School-level: 0 (very low) = less than 65% of PLC teachers in school with score of 2 1 (low) = 65% to <75% of PLC teachers in school with score of 2 2 (moderate) = 75-85% of PLC teachers in school with score of 2 3 (high) = over 85% of PLC teachers in school with score of 2 Adequate implementation at school level is score of 2.	Sample level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Perceived effectiveness of engagement in PLC on teacher competencies	Common planning time is expected to lead to teacher proficiency in 4 key competencies: identifying standards-aligned assignments, construction of quality assignment prompts, developing instructional plans, and formative assessment.	Teacher	Teacher survey	Teacher Survey asks respondents to report improvement from the beginning to the end of the year. There are 7 items covering the 4 competencies. Calculations for this measure are based on an index averaging the seven items.	0 (very low) = teacher reports that on average her abilities did not improve at all between the beginning and end of the year's work with LDC 1 (low) = teacher reports that on her abilities improved a little 2 (moderate) = teacher reports that her abilities improved moderately 3 (high) = teacher reports her abilities improved a great deal	Adequate implementation is score of 2 at teacher level	School-level: 0 (very low) = less than 65% of PLC teachers in school with score of 2 1 (low) = 65% to <75% of PLC teachers in school with score of 2 2 (moderate) = 75-85% of PLC teachers in school with score of 2 3 (high) = over 85% of PLC teachers in school with score of 2 Adequate implementation at school level is score of 2.	Sample level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2016-17 to 2018-19
All indicators	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Sample-level for key component as a whole 1 = adequate implementation for each indicator 0 = inadequate implementation for one or more indicator Adequate implementation at sample level for key component is score of 1	All participating schools	Once per year from 2017-18 to 2018-19

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Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
over all columns: **2. Key Component = Asynchronous Support from LDC Coaches**										
Coach Comments on Modules	Coaches required to provide feedback on modules at set points in the instructional sequence: teaching task, complete module, and revised module.	Module (universe is all modules linked to LEARN tab courses)	CoreTools Analytic data	LDC.org will provide at least 2 data pulls per year of individual teacher level CoreTools data with information on teachers' interaction with the online courses and CoreTools features	0 (very low) = no coach comments 1 (low) = coach comment provided at one key point in design 2 (moderate) = coach comment provided at two key points in design 3 (high) = coach comment provided at three or more key points in design	Adequate implementation at module level is score of 2	School-level: 0 (very low) = less than 65% of modules from school PLC with score of 2 1 (low) = 65-74% of modules from school PLC with score of 2 2 (moderate) = 75-85% of modules from school PLC with score of 2 3 (high) = over 85% of modules from school PLC with score of 2 Adequate implementation at school level is score of 2.	Sample-level 0 = < 25% schools with **score ≥ 2** 1 = 26-50% schools with **score ≥ 2** 2 = 51-75% schools with **score ≥ 2** 3 = > 75% schools with **score ≥ 2** Adequate implementation at sample level is a score of 2	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Coach Formative Peer Review on Modules	Coaches required to provide feedback on modules via Peer Review Feedback at set points in the instructional sequence: teaching task, complete module, and revised module.	Teacher (universe is all modules linked to LEARN tab courses)	CoreTools Analytic data	LDC.org will provide at least 2 data pulls per year of individual teacher level CoreTools data with information on teachers' interaction with the online courses and CoreTools features	0 (low) = coach feedback not provided on a linked course via peer review rubric at least once per year per teacher 1 (moderate) = coach feedback provided on a linked course once via peer review rubric per year per teacher	Adequate implementation at teacher level is score of 1	School-level: 0 (very low) = less than 65% of teachers from school PLC with score of 1 1 (low) = 65-74% of teachers from school PLC with score of 1 2 (moderate) = 75-85% of teachers from school PLC with score of 1 3 (high) = over 85% of teachers from school PLC with score of 1 Adequate implementation at school level is score of 2.	Sample-level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 2	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Teacher perception of the helpfulness of coach written feedback on modules	Teacher rating of coach-provided asynchronous feedback via CoreTools between push-in sessions	Teacher	Teacher survey	Spring teacher survey administered by CRESST will ask teachers to report on whether they found written feedback via the peer review form and comments in CoreTools helpful.	0 (very low) = not helpful 1 (low) = a little helpful 2 (moderate) = moderately helpful 3 (high) = very helpful	Adequate implementation at teacher level is score of 2	School-level: 0 (very low) = less than 65% of teachers in school PLC with score of 2 1 (low) = 65-74% of teachers in school PLC with score of 2 2 (moderate) = 75-85% of teachers in school PLC with score of 2 3 (high) = over 85% of teachers in school PLC with score of 2 Adequate implementation at school level is score of 2.	Sample-level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 2	All participating schools	Once per year from 2016-17 to 2018-19
All indicators	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Sample-level for key component as a whole 1 = adequate implementation for each indicator 0 = inadequate implementation for one or more indicator Adequate implementation at sample level for key component is score of 1.	All participating schools	2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
3. Key Component = Teacher Implementation Activities										
Module editing	Participating teachers expected to edit at least one module in each year of implementation.	Teacher	CoreTools data	Data transmitted by LDC.org to CRESST in 2 data pulls per year	0 = no evidence of edits to task on any module 1 = edited task on at least one module 2 = edited task in at least one module and either standards OR text in at least one module 3 = edited task in at least one module and either standards OR text in at least one module, and either skills and mini-tasks or rubric in at least one module.	Adequate implementation at teacher level is score of 2	School-level: 0 (very low) = less than 65% of teachers in school PLC with score of 2 1 (low) = 65% to <75% of teachers in school PLC with score of 2 2 (moderate) = 75-85% of teachers in school PLC with score of 2 3 (high) = over 85% of teachers in school PLC with score of 2 Adequate implementation at school level is score of 2.	Sample-level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Module implementation	Participating teachers expected to implement two modules per year and upload student work based on modules	Teacher	CoreTools data	Data transmitted by LDC.org to CRESST in 2 data pulls per year	0 (very low) = no student work samples uploaded to CoreTools 1 (low) = student work samples for 1 module uploaded 2 (moderate) = student work samples for 2 modules uploaded 3 (high) = student work samples for 3 or more modules uploaded	Adequate implementation at teacher level is score of 2	0 (very low) = less than 65% of teachers in school PLC with score of 2 1 (low) = 65-74% of teachers in school PLC with score of 2 2 (moderate) = 75-85% of teachers in school PLC with score of 2 3 (high) = over 85% of teachers in school PLC with score of 2 Adequate implementation at school level is score of 2.	Sample-level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19
All indicators	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Sample-level for key component as a whole 1 = adequate implementation for each indicator 0 = inadequate implementation for one or more indicator Adequate implementation at sample level for key component is score of 1.	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
4. Key Component = Leadership Support at Different Levels										
Frequency of Coach/Teacher Leader monthly meetings	At minimum, Teacher Leaders are expected to have 30 minute planning and progress call with coach each month.	School	PLC Reflection form		0 (very low) = less than 4 planning and progress calls in the year 1 (low) = 4-8 planning and progress calls 2 (moderate) = 9-13 planning and progress calls 3 (high) = 14 or more planning and progress calls	Adequate implementation at school level is score of 2		Sample-level 0 = < 25% schools with **score ≥ 2** 1 = 26-50% schools with **score ≥ 2** 2 = 51-75% schools with **score ≥ 2** 3 = > 75% schools with **score ≥ 2** Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19
Administrator attendance at quarterly in-person administrator meeting	One administrator per school is expected to attend LDC's in-person administrator meetings, occurring three times during the school year.	School	LDC Attendance Records		0 (very low) = participating in no event 1 (low) = participating in 1 event 2 (moderate) = participating in 2 events 3 (high) = participating in 3-4 events	Adequate implementation at school level is score of 2		Sample-level 0 = < 25% schools with **score ≥ 2** 1 = 26-50% schools with **score ≥ 2** 2 = 51-75% schools with **score ≥ 2** 3 = > 75% schools with **score ≥ 2** Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Teacher Leader attendance at quarterly in-person Teacher Leader meetings	Teacher Leader is expected to attend LDC's in-person administrator meetings, occurring three times during the school year.	School	LDC Attendance records		0 (very low) = participating in no event 1 (low) = participating in 1 event 2 (moderate) = participating in 2 events 3 (high) = participating in 3-4 events	Adequate implementation at school level is score of 2		Sample-level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2017-18 to 2018-19

Indicators	Definition	Unit of imple-mentation	Data source	Data collection (who, when)	Score for levels of implementation at unit level	Threshold for adequate implementation at unit level	Roll-up to next higher level if needed (score and threshold): School level	Roll-up to program level (score and threshold for adequate implementation at sample level)	Expected sample for fidelity measure	Expected years of fidelity measurement
Principal Mini-task Observation	School leaders expected to observe all LDC teachers implementing at least one mini-task	Teacher	Teacher survey	Data collected each Spring via CRESST survey.	0 (low) = teacher reports 0 observations by school leader 1 (moderate) = teacher reports 1 observation by school leader 2 (high) = teacher reports 2 observations by school leader 3 (very high) = teacher reports 3 or more observations by school leader	Adequate implementation at teacher level is 1	0 (very low) = less than 65% of teachers in school PLC reporting adequate implementation 1 (low) = 65% to 74% of teachers in school PLC reporting adequate implementation 2 (moderate) = 75% to 99% of teachers in school PLC reporting adequate implementation 3 (high) = 100% of teachers in school PLC reporting adequate implementation Adequate implementation at school level is score of 2.	Sample-level 0 = < 25% schools with score ≥ 2 1 = 26-50% schools with score ≥ 2 2 = 51-75% schools with score ≥ 2 3 = > 75% schools with score ≥ 2 Adequate implementation at sample level is a score of 3	All participating schools	Once per year from 2016-17 to 2018-19
All indicators	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Sample-level for key component as a whole 1 = adequate implementation for each indicator 0 = inadequate implementation for one or more indicator	All participating schools	Once per year from 2017-18 to 2018-19

Appendix H:
Outcome Analysis Methodology

Analysis Model Specification

For our outcome analyses, we used a threshold of $p < .05$ to determine whether there was a statistically significant impact of LDC on ELA achievement. In addition to the LDC treatment indicator, a teacher effect for years of experience was included, as well as an aggregate indicator measuring the mean baseline performance of each student's classroom peers. The fixed effects also included student characteristics to identify the matched comparison sample of students, such as baseline achievement, socioeconomic status, demographics, language proficiency, grade level, and participation in special education.

The three-level MMMC model was used to estimate the impacts of the LDC intervention on student learning. This same analytic model will be used to estimate impacts for future years of LDC. The general specification for the middle school level MMMC model is shown in the following equation using similar notation proposed by Browne et al. (2001, equation 6) and applied in Tranmer, Steel, and Browne (2014, equation 3).

$$y_i = x_i'\beta + u^{(3)}_{School(i)} \sum_{j \in Teacher(i)} w_{i,j} u^{(2)}_j + e_i$$

$$i = 1, \dots, n \quad Teacher(i) \subset (1, \dots, J)$$

$$u^{(3)}_{School(i)} \sim N(0, \sigma^2_{u(2)}), \quad u^{(2)}_j \sim N(0, \sigma^2_{u(2)}), \quad e_i \sim N(0, \sigma^2_e)$$

In this model y_i is the student achievement score response, X_i is a vector of the fixed covariates and β is the vector of the corresponding fixed effects. $School(i)$ is the school which student i attends, thus the term $u^{(3)}_{School(i)}$ represents the random effects for that level of classification. Within the term $\sum_{j \in Teacher(i)} w_{i,j} u^{(2)}_j$, $u^{(2)}_j$ is the set of j random effects for the teachers included in the selected dataset, and $w_{i,j}$ is the weight which sums to 1 for each student applied in proportion to the instruction time assigned with each teacher. The following presents an example of the full model middle school specification.

$$\begin{aligned}
achievement_i = {} & \beta_0 + LDC_i * \beta_1 + priorELA_i * \beta_2 + priorMath_i * \beta_3 + Female_i * \beta_4 + LEP_i \\
& * \beta_5 + SES_i * \beta_6 + Black_i * \beta_7 + Hispanic_i * \beta_8 * + SPED_i * \beta_9 + Gifted_i * \beta_{10} \\
& + HonorsELA_i * \beta_{11} + priorClassELA_i * \beta_{12} + TeachExp_i * \beta_{13} \\
& + TeachAttend_i * \beta_{14} + u^{(3)}_{School(i)} \sum_{j \in Teacher(i)} w_{i,j} u^{(2)}_j + e_i
\end{aligned}$$

$$u^{(3)}_{School(i)} \sim N(0, \sigma^2_{u(3)}), \quad u^{(2)}_j \sim N(0, \sigma^2_{u(2)}), \quad e_i \sim N(0, \sigma^2_e)$$

In this model, $achievement_i$ is the standardized ELA outcome score for student i; In the dosage-dependent model LDC_i is the proportion of core class instruction time taken with an LDC teacher (ranges 0–1). In the dosage-independent model LDC_i is coded as zero for comparison students and as 1 for students receiving any level of LDC teacher exposure.

- $Female_i, LEP_i, Black_i, Hispanic_i, SPED_i, Gifted_i, and\ SES_i$ are student demographic indicators coded 1 if the status is present and 0 if absent;

- $HonorsELA_i$ is dummy coded 1 when a student was enrolled in an at least one honors ELA course and otherwise as 0, allowing students who did not enroll in any honors ELA courses to serve as the reference group;

- $priorELA_i$ and $priorMath_i$ are standardized student achievement scores from the baseline year;

- $priorClassELA_i$ is the aggregated mean of the baseline ELA scores for all the core class peers of student i;

- $TeachExp_i$ is the aggregated percentage of the years of teaching experience less than three for those teachers that student i was exposed to in his/her core classes;

- $TeachAttend_i$ is the aggregated mean attendance for those teachers that student i was exposed to in his/her core classes;

- β_1 is the impact of LDC, the treatment;

- β_{12} is the average difference between Cohort 1 and Cohort 2;

- β_2 & β_3 are the effects of the baseline score covariates;

- $\beta_4 \dots \beta_{10}$ are the effects of the demographic covariates;

- $\beta_{11} \dots \beta_{14}$ are the effects of the aggregated class level covariates;

- $u^{(3)}_{School(i)}, u^{(2)}_j, e_i$ are the error components at the school, teacher, and student level respectively assumed to all have a mean of zero and a variance, $\sigma^2_{u(2)}, \sigma^2_{u(3)}, \sigma^2_e$ respectively.

Student/Teacher Course Exposure Weighting

Tables H1 and H2 demonstrate how the process of calculating general MMMC teacher weights and LDC treatment weights, for the dosage modeling approach, was conducted respectively for elementary and middle school. In elementary school, in the event that a student was exposed to more than one teacher, each content area was given equal weight in distributing teacher/student exposure. For example, if a student was enrolled for both ELA and social studies/history under one teacher, then that teacher was coded as .67 for having contributed to two thirds of the students' core curriculum exposure. If the same student enrolled in science with a different teacher than the one who was linked to their course marks in ELA and social studies/history, then that science teacher would have been coded as .33 and

all other teachers in the sample would have been coded as zero. This would then result in the student's exposure adding to a unity (1).

Table H1

Example of Elementary School Student/Teacher Weighting Based on Course Links

Marking period	Example student/teacher weighting for use in MMMC (Weight = Marking Period/Total Marking Period3)	Example treatment dosage weight
One	Student enrolled with an intervention teacher: Weight = (1/3) = .333	Weight = .333
Two	Student enrolled with an intervention Teacher: Weight = (1/3) = .333	Weight = .333
Three	Student enrolled with a non-intervention teacher: Weight = (1/3) = .333	Weight = .0
Total	Unity: for every student the student/teacher weights sum to 1	Treatment weight = .667

Note. In the selected samples for these analyses, core content courses within each marking period were taught by a single teacher.

In middle school, students' exposure to teachers at the course level in the three core content areas was coded in the same manner as in the elementary grades based on enrolled time preceding the assessment period. A difference in our middle school coding process was that we did not force each core content area into equal weighting. Instead, each core content area exposure contributed to a core content area total sum that formed the basis from which the weights were proportioned.

Most commonly a student had equivalent days of core instruction exposure in each of the three content areas (often 214 days in each content area). In that scenario, if a student had exposure to three different teachers, then each teacher would contribute one third (.33) of the overall core curriculum exposure and all other teachers in the sample would be coded as zero. However, in addition to the typical core science course, extra core science courses were also included in the LDC analysis (e.g., an eighth-grade student taking biology), which made it possible then for a student to accumulate more units in science than in the other two content areas.

The weighting in middle school was always distributed as a proportion of the total exposure days in the three content areas. Therefore, if a student accumulated 300 science days (across two courses), 200 social studies days, and 200 ELA days, the base number of instruction days would be 700 days. If, using that same scenario, the same teacher taught both the typical core and biology courses then that teacher would contribute three sevenths (.43) of the overall core curriculum exposure with the social studies and science teachers each contributing the other two sevenths (.285), again resulting in the student's exposure adding to a unity (1).

Table H2

Example of Middle School Student/Teacher Weighting Based on Course Mark Links

Core content area	Course name	Example student/teacher weighting for use in MMMC (Weight = Subject Days/Total Days)	Example treatment dosage weight
ELA	English 7A & 7B	Student enrolled two terms of core ELA (Grade 7) with an intervention teacher: Weight = 2/5 = .400	Weight = .400
Social studies	Social Studies WHG: ANC CIV & B	Student enrolled two terms of core social studies (Grade 7) with a nonintervention teacher: Weight = 2/5 = .400	Weight = .0
Science	Science 7	Student enrolled one terms of core science (Grade 7) with a nonintervention teacher: Weight = 1/5 = .200	Weight = .0
Total		Unity: for every student the student/teacher weights sum to 1	Treatment weight = .400

Note. "Days" refers to core content enrolled days preceding the assessment date.

Calculation of Effect Size

We calculated student-level effect sizes according to the What Works Clearinghouse (WWC) 3.0 criteria. Specifically, for the impact analysis with treatment status as a dichotomous variable, we calculated Hedges' g, the difference in adjusted mean outcomes for the groups divided by the unadjusted pooled within-group standard deviation of the outcome measure in the sample, for all outcomes. The difference in adjusted mean outcomes is estimated by β_1 in the models we previously defined, as outlined in the WWC standards handbook for computing effect sizes in multi-level frameworks. Specifically,

$$g = \frac{\omega \gamma}{\sqrt{\dfrac{(n_i - 1)s_i^2 + (n_c - 1)s_c^2}{n_i + n_c - 2}}}$$

where γ is β_1, which is the coefficient from the MMMC for the intervention effect.

Note that in our analyses the outcome measure is standardized within the analytical sample ($M = 0$, $SD = 1$). As a result, we expect that g would likely be quite similar to the β_1 coefficient from the MMMC model in the large samples we plan to collect later in the study.

Though it is not standard to use g with a continuous treatment effect, as in the case of our dosage-dependent treatment measure, we have defined and matched populations n_i and

n_c where treated students (n_i) could have any positive treatment value <= 1, and comparison students (n_c) had a treatment value of zero. We could therefore calculate g in the case of our dosage-dependent treatment measure, and again expect that it would not differ substantially from the β_1 coefficient. It is crucial, however, to note that g and β_1 in the dosage-dependent models reflect the effect size projected for a student who would receive exposure to intervention teachers in all of their core classes. Along with this effect we report average dosage received by treated students so that the average treatment effect on treated students could be calculated.

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National Center for Research on Evaluation,
Standards, and Student Testing (CRESST)

Graduate School of Education & Information Studies
University of California, Los Angeles
300 Charles E. Young Drive North
GSE&IS Bldg., Box 951522
Los Angeles, CA 90095-1522

(310) 206-1532
www.cresst.org