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LITERACY DESIGN COLLABORATIVE 2016-17 EVALUATION REPORT

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Joan L. Herman, Principal Investigator
Jia Wang, Co-Principal Investigator and Project Director

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

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Executive Summary

The Literacy Design Collaborative (LDC) was created to support teachers in implementing College and Career Readiness Standards in order to teach literacy skills 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 further develop their expertise and design standards-driven, literacy-rich writing assignments within their existing curriculum 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 Investing in Innovation (i3) validation grant. The 2016-17 school year was the first year of implementation, following a pilot year during which the implementation plan, instruments, data collection processes, and analytical methodologies were refined.

This annual report presents an initial look at LDC implementation in the first cohort of 20 schools in a large West Coast district during their first year of implementation. The early results suggest the following:

- Participants across all groups reported positive attitudes toward LDC. All measures of satisfaction or improvement were rated positively by more than half of respondents. Two thirds of teachers expressed interest in learning more about how to lead LDC implementation at their schools, and over half of project liaisons and administrators anticipated that their teachers would continue with LDC the following year.

- Participants perceive a positive impact on student outcomes. Three quarters of teachers and 95% of administrators agreed that LDC helped improve students' literacy performance. In particular, teachers reported high impact on writing quality, college and career readiness skills, overall literacy performance, reading skills, and content knowledge.

- Individuals leading and supporting the LDC implementation at all levels received highly positive ratings. LDC coaches were rated by 95% of teachers as providing appropriate and timely feedback. Project liaisons were almost universally reported to be highly approachable, effective, and knowledgeable. Almost all teachers reported that their administrators encouraged LDC participation in schools. A large

5majority of project liaisons and administrators had positive interactions with LDC staff and were able to receive appropriate resources and support when needed.

- Analysis of module artifacts suggest that teachers at the elementary school level were moderately successful in the backwards design process, particularly in developing high quality writing tasks for students. This was evidenced in the mean ratings that were generally in the three (moderately present or realized) range both for the overall elementary sample and content area subgroups.

- At this point, there is insufficient quantitative evidence to suggest a positive LDC impact on student test scores either at the elementary or middle school level. This finding should not be surprising given the early stage of intervention, with teachers having only completed one year of the two-year implementation process.

- The LDC intervention appears to have differential results for teachers in different content areas. It seems to be a better fit for English language arts and history/social studies teachers than for science and math teachers. Teacher feedback, module scores, and level of engagement with CoreTools all indicated that science and math teachers were less engaged with the material and experienced less success.

- This district's implementation did not, on average, appear to have met LDC's participation expectations for high implementation. The ideal is that PLC members meet weekly for at least 60 minutes. Only 30% of teachers reported meeting at least once a week or more. Almost half (46%) met every other week. Almost three quarters reported that meetings lasted 45 minutes to an hour, and a quarter reported they lasted longer than an hour. That said, 70% of teachers agreed that their PLC was given sufficient time to meet, although many teachers who provided open-ended responses asked for more protected, paid time.

As an ongoing multi-year intervention, the LDC implementation will continue to evolve year to year as participants provide feedback and LDC program managers make refinements. Thus, we anticipate that further significant changes to the course material and the delivery system that are already in progress for Year 2 will likely result in continued and possibly increased positive feedback. Related, we posit that further support for science and math teachers would likely result in higher levels of success and satisfaction for those teachers. Finally, as teachers return for a second year and achieve greater experience with the LDC model, it is likely that their ability to apply their learning in increasingly productive ways will become more evident in their self-reports, module quality, and engagement with the LDC platform.

Literacy Design Collaborative: 2016-17 Evaluation Report

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

CRESST/University of California, Los Angeles

1.0 Introduction

The Literacy Design Collaborative (LDC) was created to support teachers in implementing College and Career Readiness Standards in order to teach literacy skills 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 further develop their expertise 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 the implementation and impact of LDC tools 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 district-wide implementation in sixth grade advanced reading classes in a large district in Florida. Results for the studies are available in two technical 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 *Investing in Innovation* (i3) validation grant. The LDC i3 study is examining the implementation and impact of LDC in two large school districts: New York City Department of Education and a large school district on the West Coast. The evaluation study is a comprehensive mixed-method evaluation to understand the impact of LDC on student

learning using a quasi-experimental design, as well as to document impact on teacher skills and practices. Specifically, the evaluation study addresses a rich range of questions about program characteristics, conditions and program impacts in the context of two large urban school districts. The study will draw on data from two cohorts of schools, with each school housing a professional learning community (PLC) of teachers engaging in professional learning about LDC and implementing LDC mini-tasks and modules in their classrooms. We will measure teacher implementation and skill improvement via teacher surveys, analysis of analytic data from LDC's online CoreTools module building platform, and artifact analysis. While we will document the core strategies of the LDC model as implemented and provide support for LDC improvement, the central focus of our comprehensive mixed-method 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 2016-17 school year. This annual progress report examines LDC implementation during the 2016-17 school year in a large school district on the West Coast, and presents the first exploratory analyses of the impact of LDC on student learning in evaluation cohort schools. A parallel progress report focuses on implementation in the New York City Department of Education (NYCDOE). The current annual progress report presents results from (a) analyses describing how LDC participants interacted with the CoreTools module building platform; (b) scoring by CRESST of instructional modules created by LDC participants; (c) surveys of classroom teachers, LDC project liaisons, and school administrators; and (d) student outcome analyses using the quasi-experimental design.

These results provide a window into how LDC was implemented in 2016-17, the perceived utility and effectiveness of various program components, and the perceived impact of LDC on both teacher and student skills and knowledge. A preliminary test of the effectiveness of LDC in increasing student learning is also included in the report.

1.1 Logic Model

The logic model includes four key intervention components that were predicted to be the drivers of change in teacher practice and student learning (see Figure 1.1). These are 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** 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 implementation expectations 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
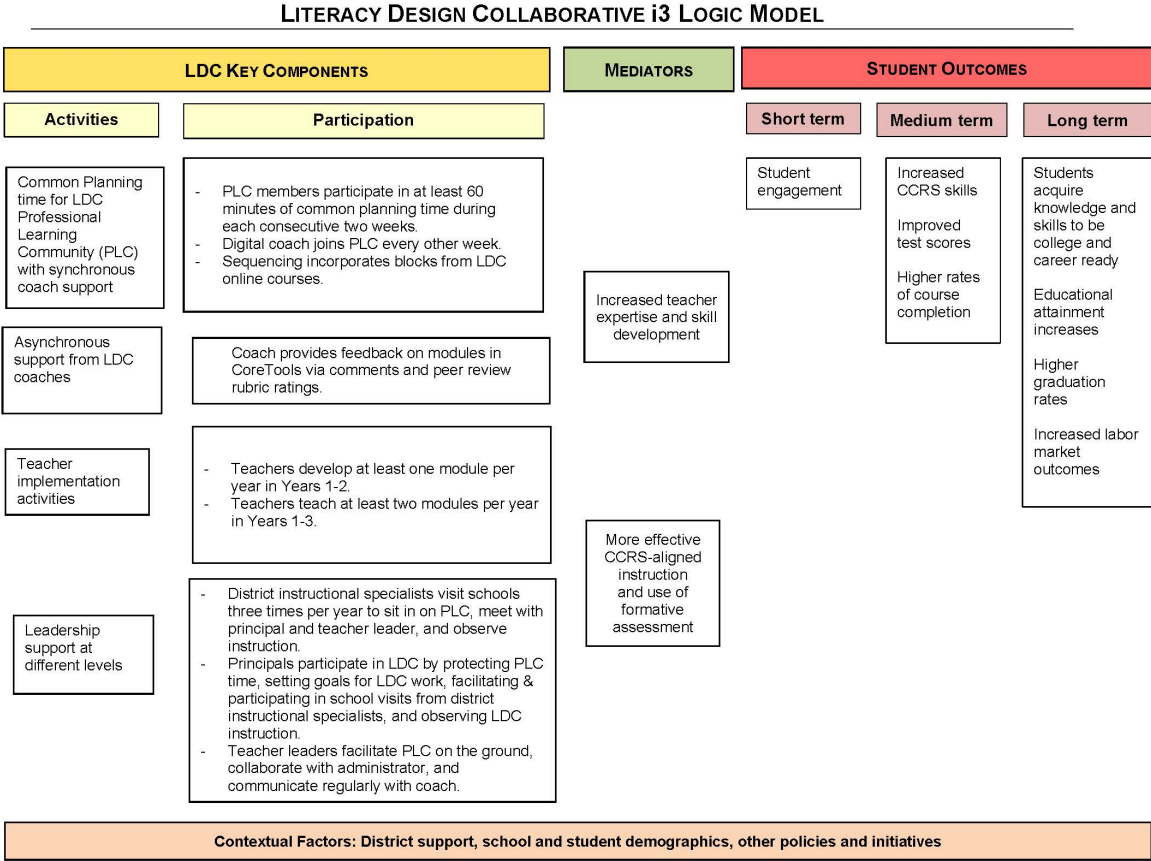
Figure 1.1. LDC i3 Logic Model.

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 which incorporates 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 has been revised based on refinements to the program in response to learning from the pilot year (2015-16) and the first year for implementation cohort 1 (2016-17). The logic model presented here is current as of Fall 2017.

Note also that Figure 1.1 refers to *teacher leaders*, but this report will refer to *project liaisons*. That distinction reflects an update to the model; starting in 2017-18, teacher leaders

will be identified in the first year that a school implements LDC, and those teacher leaders will receive a stipend in their first year. This change was not yet in effect during the 2016-17 school year, and we therefore refer to teachers playing a leadership role in LDC as project liaisons.

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, given that the evaluation is still in its early stages, there is limited information available regarding program impacts. This report provides a first look at how the refined LDC model is impacting student learning, although the quasi-experimental design analyses contained herein should be considered exploratory rather than confirmatory. The first confirmatory analysis will be conducted at the end of two years of participation for the teachers.

I. **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 work spaces, 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?

II. **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 the 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?

III. 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, socio-economic 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 the LDC tool use is most effective?

g. To what extent do Cohort 1 participating schools and teachers continue their LDC-influenced practices in the 2019-20 school year after the 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 the LDC support ends?

2.0 Study Methodology

In this chapter we provide an overview of the methodology behind this early look at LDC in 2016-17. We begin by describing the various instruments and data sources for the analyses, including (a) analytic data from LDC's CoreTools platform; (b) module artifacts including samples of student work; (c) surveys of classroom teachers and project liaisons participating in PLCs and administrators overseeing the implementation; and (d) 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 describe below 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 include school-, teacher-, and student-level variables.

LDC CoreTools. The CRESST team received the LDC program data on i3 participants' interactions with the CoreTools module building platform. The data files captured three key activities related to the module building platform: document page viewing, document editing, and document commenting.

Specifically, the data contained date- and time-stamped records of participants' activities in each of these areas, and we analyzed variation in the number of times the participants performed these activities across the school year. We generated descriptive statistics (minimum, maximum, mean, standard deviation) for the number of times participants viewed a document page, edited a module document, and commented on a module document. We also produced descriptive statistics on these behaviors for various role (teacher, project liaison, administrator), school level (elementary, middle, high) and content area subgroups. Finally, we examined the difference in average engagement in these key activities between teachers whose completed modules we rated in Chapter 4 of this report and those teachers who did not complete a module.

Modules. Our existing rubrics, developed for our prior LDC evaluation work (Herman et al., 2015a), were adapted to examine the quality and coherence of the LDC modules and to address the quality of both content and literacy development materials (i.e., template task,

student work samples, and descriptions of the pacing and goals of the modules).[1] The six dimensions examined for this study included the following: (1) effective writing task; (2) alignment to the CCSS and local and state literacy and content standards; (3) fidelity to LDC module instruction; (4) quality of instructional strategies; (5) coherence and clarity of module; and, (6) overall impression. Three additional dimensions that focused on issues of text quality were excluded since submissions did not include copies of the materials used by the teachers. Each dimension was rated using a five-point scale with anchor points for the first five dimensions ranging from "not present or not realized" to "fully present or fully realized" and anchor points for the final dimension ranging from inadequate to advanced LDC module implementation. Detailed definitions of each dimension and descriptions for what constitutes ratings of 1, 3, and 5 on each dimension can be found in the rubric in Appendix A.

Surveys (Teachers, Project Liaisons, and Administrators). In collaboration with LDC, CRESST made substantial revisions to pilot year (2015-16) surveys. Revisions address lessons learned from administration and analysis of the pilot surveys, adjustments to the program model made during and subsequent to the pilot year, and a desire to yield more robust information on teacher skills and practices. Items were also added to help understand in which grades and classes teachers were implementing LDC and to help identify the modules teachers were spending their time and energy on. Similar to the pilot year, CRESST designed five surveys to capture data on the experience of LDC participants playing three different roles: teacher, project liaison, and administrator. Some project liaisons were also administrators or teachers. Thus, five versions of the surveys were administered in spring 2017: (1) teacher, (2) teacher/project liaison, (3) project liaison, (4) administrator, and (5) administrator/project liaison.

The surveys were designed to capture multiple perspectives on key aspects of LDC's logic model[2] (see Figure 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 sub-domains in Table 2.1. Domains were selected to align with the LDC i3 logic model and with the CRESST evaluation's research questions. Note that most domains cover multiple sub-domains, constructs and survey questions. *Professional Learning*

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[1] See Reisman, Herman, Luskin, and Epstein (2013) for a summary of the original generalizability study conducted using the CRESST developed rubrics. We excluded three dimensions that focused on issues of text quality as texts selected by teachers were not readily available in CoreTools for the analysis.

[2] 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.

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 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	Project Liaison	Administrator
LDC Participation	X	X	X
Professional Learning Community and 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			
Project Liaison Support	X		
School Administrator Support / Classroom Observation	X	X	X
Project Liaison 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' perception of *Facilitators and Barriers* to implementation and perceptions regarding leadership roles and support for LDC at different levels. Project liaisons and administrators were also asked for their perceptions regarding if and how LDC will be sustained and expanded within the school. Finally, all respondents were asked open-ended questions regarding *Areas of Improvement* for LDC implementation. Teacher, project liaison, and administrator surveys can be found in Appendices B, C, and D.

Administrative Data used in Student Outcomes Analysis. Student-level variables utilized in the outcomes analysis included race/ethnicity, gender, poverty status, special education status, English language proficiency, gifted status, grade, and prior and current year achievement in math and ELA on state assessments. Teacher-level indicators obtained and utilized included years of teaching experience and teaching status (permanent, substitute, student teacher, etc.). 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 2016-17 school year, with 154 classroom teachers participating and 34 administrators overseeing the work (see Table 2.2). The 20 schools included 11 elementary schools, four middle schools, and one high school, two K-8 schools, one 6-12 school, and one K-12 school. Participants taught across all grade levels from K to 12. Most secondary teachers taught ELA, social studies/history, or science, with a handful teaching other subjects such as math, foreign languages, special education, or the arts.

As can be seen in Table 2.*2*, across the different measures data were available for a large majority of participants. Ninety-two percent of teachers consented to participate in the study, with 79 percent of all teachers completing the survey in spring 2017. The consent rate (82 percent) and survey response rate (75 percent) for administrators were a little lower than the corresponding rates for teachers. The CoreTools dataset, which was delivered to CRESST directly by LDC and did not depend on teachers' individual study consents, captured a similar number of teachers and administrators to those that consented to the CRESST survey.

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 created during the 2016-17 school year that included original uploaded student work samples,

because these samples were required for module scoring. That restriction yielded a sample of 53 modules that were authored or co-authored by 50 teachers (about a third of all participating teachers) and two administrators. Given the presence of uploaded student work, these are modules that we are confident were implemented in the classroom. It should be noted, however, that as described in Chapter 4, almost 80% of teachers made at least one edit to a mini-task or module in CoreTools. The 53 modules are therefore part of a larger universe of modules worked on by participating teachers; some of the modules which did not have uploaded student work may have also been implemented in classrooms.

The school district required individually signed consent forms before releasing teacher data and teacher/student rosters, so for the outcomes analysis, we only received data on teachers who consented to participate in the study. The sample was further restricted by the need for student achievement data for both the outcome year (2016-17) and the prior year (2015-16). As a result, participants teaching either high school or lower elementary grades (K-3) could not be included in the student outcome analysis. These restrictions accounted for almost all of the reduction in the sample from 143 consenting teachers to 67 teachers in the outcomes analysis. Specifically, 23 high school teachers and 42 K-3 teachers were excluded. In addition, two middle school math teachers who consented to the study were excluded from the analysis as the rest of the middle school sample consisted of ELA, social studies/history, and science teachers; inclusion of the two math teachers would have complicated the structure of the models without substantially impacting the results. Six other consenting participants (e.g. literacy coach, instructional coach, RSP, etc.) were also excluded because they were not connected to specific classrooms. Finally, three additional teachers (two elementary school teachers and one middle school teacher) did not show up in the district administrative data, probably because they played roles such as special education that were not attached to classroom rosters. Further details on sample are presented in each of the results sections.

Table 2.2

Number of Participating Schools, Teachers, and Administrators in the West Coast District and Sample Size for Different Instruments

	Number of classroom teachers	Number of administrators	Number of schools in which above teachers and administrators practice
Participated in LDC	154	34	20
Consented to CRESST study	142	28	20
Completed survey	122	25	20
Present in CoreTools dataset	141	30	12
Author/co-author of module with student work uploaded	50	2	12
Included in outcomes analysis	67	NA	19

2.3 Module Scoring Process

LDC requirements intended that all teachers implement two modules over the course of the year, with the first spanning one week based on one text and the second that spanned across multiple weeks and used 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 the PLC.

Modules included in this analysis were collected from elementary and secondary teachers who participated during the 2016–2017 school year. As noted earlier, all modules were retrieved from LDC's CoreTools online platform and examined during summer 2017. Artifacts that included both a completed module template and at least one student work sample, as determined by the evaluation team and/or expert raters, were then included in the analysis. As a result, 53 modules were rated and analyzed for teachers who participated in the i3 study. Additional modules that were missing a significant number of components or that were later found ineligible for the study were dropped after the rating sessions.

Expert raters with experience teaching in the targeted grade spans and content areas were recruited from schools in Los Angeles County. The panel included two elementary school teachers, two secondary science teachers, two secondary social studies teachers, and three

secondary English language arts (ELA) teachers. A greater number of raters was included for ELA since the number of modules eligible for analysis was greater for this content area.

Separate trainings were conducted for teachers from each grade span/content area. These trainings each lasted approximately one half-day, and were conducted by a member of the evaluation team with expertise on the Common Core and the rating of student and teacher artifacts. Each training session included an overview of the LDC goals, template task, the structure of the modules, and the CRESST rating dimensions. These dimensions were each rated using a five-point scale and focused on 1) the effective writing task, 2) alignment to the CCSS and local and state literacy and content standards, 3) fidelity to LDC module instruction, 4) quality instructional strategies, 5) the coherence and clarity of the module, and 6) the raters' overall impression (see Appendix A for full descriptions of the dimensions).

Once the training was complete, calibration was conducted by having teachers individually score and then discuss their ratings for one module in the content area in which they would be focusing. Scoring was then conducted on subsequent days with each module individually rated. All modules that were rated by at least two expert teachers were then discussed, with the goal, but not the requirement to reach consensus (see Carlson & McCaslin, 2003). All discussions were facilitated or supervised by the same member of the evaluation team who conducted the initial training.

Because of the relatively small number of total eligible modules and the speed at which panelists were able to calibrate, while we initially planned for one-third of the modules to be analyzed by more than one rater, the final rate of crossover was 49 or 92% of modules. It should also be noted that four of these modules were rated by all three members of the Secondary ELA panel as part of their calibration activities.

Table 2.3 presents a brief overview of modules rated. More specifically, 62% of the modules were at the elementary level with the remaining modules spanning middle school and/or high school. Elementary modules were primarily focused on ELA or science, while secondary modules were more likely to focus on social studies. "One-week one-text" modules were a minority of both the elementary and secondary sets. Both elementary and secondary teachers were far more likely to adapt a module than create one that was original, and modules with one author were much more common than modules with multiple authors. While over two-thirds of the modules did provide background information for students, the inclusion of extension activities and teacher reflections were less common.

Table 2.3
Background Variables for all Modules Rated (N = 53)

Variables	Elementary #	Elementary %	Secondary #	Secondary %	Total #	Total %
Module format						
One week, one text	9	27.3	9	45.0	18	34.0
Multi week, multi text	24	72.7	11	55.0	35	66.0
Module origin						
Adapted	25	75.8	15	75.0	40	75.5
Original	8	24.2	5	25.0	13	24.5
Author count						
Co-authored	8	24.2	4	20.0	12	22.6
Sole	25	75.8	16	80.0	41	77.4
Subject						
ELA	13	39.4	5	25.0	18	34.0
Science	14	42.4	5	25.0	19	35.9
Social Studies	5	15.2	9	45.0	14	26.4
Other	1	3.0	1	5.0	2	3.8
Module components						
Student background	23	69.7	15	75.0	38	71.7
Extension activities	18	54.6	3	15.0	21	39.6
Teacher reflection	7	21.2	12	60.0	19	35.9
Total	33	62.3	20	37.7	53	100.0

2.4 Survey Recruitment and Administration

We began recruitment for the study by attending and soliciting consent forms at LDC Launch Days at the beginning of the 2016-17 school year. The consent forms included language stating that the study was voluntary, all data would be protected, and that by signing the form, participants gave their consent to be emailed an electronic survey in spring 2017 and their permission for CRESST to request district data that link the teacher to students. All participants – including teachers, project liaisons, and administrators – were promised a $50 gift card for completing the survey in the spring. In the pilot year, teachers

and project liaisons were offered a $20 gift card, and administrators were not offered any incentive. The amount was increased and eligibility widened so as to increase buy-in and participation in the study. The higher incentive award, as well as refinements to recruitment and survey completion protocols described below, raised the overall survey response rate to 78%, up from 57% the prior year.

Most LDC participants were unable to attend the Launch Days at the beginning of the year so CRESST used other methods to recruit and collect consent forms. With LDC staff assistance, a CRESST staff member participated in a common planning session for each PLC either in person or via videoconference. For sessions joined via video conference, consent forms were mailed to project liaisons in advance and project liaisons returned completed consent forms in a prepaid envelope or by scanning and emailing them back to CRESST. CRESST staff joined common planning sessions from October 2016 through June 2017. CRESST also followed up with individual participants to collect consent forms, but this method was less successful than recruitment during launch days and PLC sessions.

Surveys were administered in spring 2017. 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 the common planning session or who otherwise did not complete the survey. The teacher survey was closed at the end of the school year in June 2017. Administrator surveys were left open until early August when LDC staff met with administrators to plan for the 2017-18 school year.

2.5 Analytical Approaches

Multiple analytic procedures, including both quantitative and qualitative analytic methodologies, were applied to the data to answer evaluation questions about how LDC was implemented, conditions affecting implementation, and program impacts. The following sections describe the methodological approaches used to analyze the collected data.

Surveys. Descriptive statistics were generated for multiple-choice survey questions. Open-ended responses were reviewed for key themes and summarized. We collected responses from three groups of survey respondents: teachers, project liaisons, and administrators. Individuals who played more than one role are represented in the results for both roles. Therefore, the samples for the different analyses are not mutually exclusive. 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.

Means and frequencies for all multiple-choice responses are presented in full in Appendix B for teachers, Appendix C for project liaisons, and Appendix D for administrators. Responses are organized by domain and specific questions are identified by question number. For example, the domain of LDC participation is summarized in one section, but relies on information from four questions. We preface teacher questions with "T," project liaison with "PL," and administrator questions with "A"; please refer to the corresponding appendices for complete results on all items.

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 means and/or frequencies as measures of participants' engagement with the online LDC system. We calculated and presented total, average, maximum, minimum, and standard deviation for each of the measures in the dataset. In addition to reporting the overall results, we also provided results by the content subject the teacher taught (ELA, social studies/history, etc.), by participant role (project liaison or teacher), and school level (elementary, K-8, middle, and high) whenever feasible. Finally, we explored the difference in CoreTools engagement between two groups of teachers: those that completed and taught modules and those that did not complete the design and implementation process.

Modules. We used descriptive statistics (means, standard deviations) to analyze overall and subgroup performance for each content area/grade span on each of the six dimensions. Additionally, for the elementary modules, which had a moderate sample size, we used generalizability theory (G theory) 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). Principal components factor analysis was also conducted to determine whether the six dimensions examined together represent one dominant or underlying trait for the elementary sample. Finally, teacher comments during the debriefings for both elementary and secondary module ratings were examined to determine other potential issues with the rubrics and/or rating process.

Generalizability theory is a statistical framework for examining multiple sources of potential error during the scoring process. For each sample, we first modeled score variability 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 quality of modules from other potential sources of measurement error. The main effects reflect true variation across modules ($\sigma 2t$) and error variance across raters ($\sigma 2r$) and dimensions ($\sigma 2d$), while the error term ($\sigma 2trd,e$) 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 ($\sigma 2t$) and error variance across raters ($\sigma 2r$).

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 2016-17. Before conducting the analysis, we used a two-step matching process to identify a reduced pool of comparison students and teachers within schools with similar characteristics to the schools in the intervention sample.

To accomplish this, we first identified the five most similar control schools for each intervention school based on a Euclidian distance measure, by using the nearest neighbor analysis option in SPSS 24.0 (see Fix and Hodges, 1951; Wang, Neskovic, & Cooper). 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 prior student achievement in ELA, mean prior student achievement in math, 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. 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 often entail exact matching, while for continuous measures, such as prior 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 prior indicators, such as prior 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 prior achievement in math and ELA, and grade level.

During matching we also included a few variables capturing information on the teachers and peers to which students were exposed. These variables included mean prior ELA achievement of the student's peers in her core content classes, the mean attendance rate of the student's core content teachers, and the percentage of the student's core content teachers who had three or fewer years of teaching experience.

The typical structure of course taking at the middle school level involves students potentially 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, social studies/history, and science). As a result, students were not necessarily nested under individual teachers, but instead were likely to have connections to multiple teachers in the 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 multi-level modeling framework known as Multiple Membership Multiple Classification (MMMC) models (Browne et al., 2001).

These models can account for complex classification structures, such as the LDC context, in which students are nested within schools but are also members of multiple classes led by different teachers who may or may not be implementing LDC. MMMC has the flexibility to account for this type of complex nesting structure in which students are hierarchically nested under schools but may have one-to-many relationships with teachers. As can be seen in Figure 2.1, there are three classification levels in the models we employ: students, teachers, and schools. In the MMMC modeling approach, each observation at the lowest level represents one student. The double arrows linking students to teachers in Figure 2.1 signifies the possibility of one student being exposed to multiple teachers. The single arrow from teachers to schools signifies that teachers were nested with schools.
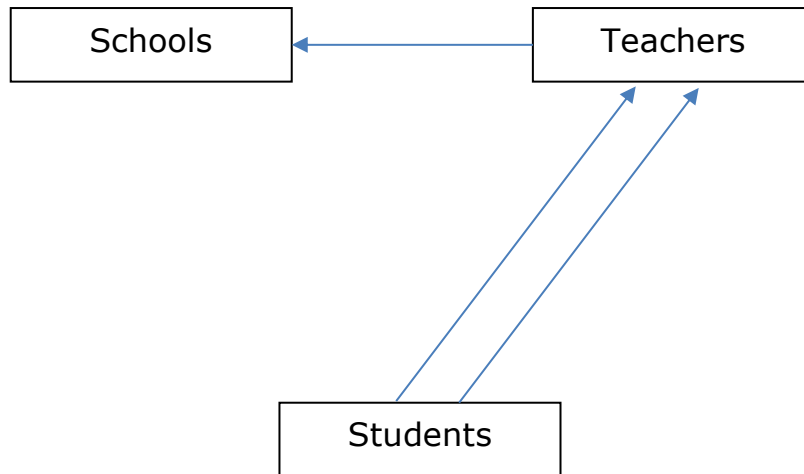
Figure 2.1: Multiple Membership Multiple Classification Structure

In the MMMC modeling approach, each observation at the lowest level represents one student. 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 the elementary data set, students were linked to teachers through the course marks they received. Students received up to 14 different course marks across each of the three grading periods. We then collapsed the course links into the three core content areas of interest of our study (see Appendix F for details on the courses included). For example, course marks in reading, listening, writing, and speaking were all collapsed into the ELA content area. 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. If a student completed all three grading periods of ELA and all three grading periods of social studies/history under one teacher, then that teacher was coded as 0.67 for having contributed to two-thirds of the students' core curriculum exposure. If the same student received course marks in science from 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 0.33 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 had two semesters of exposure to teachers in the three core content areas. Each full exposure within a semester counted as one unit in our model and exposure to teachers was measured in these units of instruction. For example, most commonly a student had two units of core instruction exposure in each the three content areas (two units of ELA instruction, two units of social studies instruction, and two units of science instruction) for a total of six units. In that scenario, if a student had exposure to three different teachers, with each contributing two units, then each teacher would contribute one-third (0.33) of the overall core curriculum exposure and all other teachers in the sample would be coded as zero. In addition to core ELA courses, supplemental ELA courses were also included in the LDC analysis, which made it possible then for a student to accumulate more than six units in the three content areas. The weighting in middle school was always distributed as a proportion of the total units in the three content areas. Therefore, if a student accumulated two core ELA units, two supplemental ELA units, two social studies units, and two science units, the base number of instruction units would be eight. If, using that same scenario, the same teacher taught both the core and supplemental ELA units then that teacher would contribute one-half (0.50) of the overall core curriculum exposure with the social studies and science teachers contributing one quarter (0.25) each, again resulting in the student's exposure adding to a unity (1).

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).

As with other multi-level models, MMMC models account for the non-independence 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) we instead employed Bayesian methods using Monte Carlo Markov chain (MCMC) techniques to best address this issue. Multi-level models incorporate demographic and achievement variables used in the matching design as

covariates, making the findings "double robust" (characteristics controlled for in both matching and outcomes analysis stages). Student demographic and prior achievement variables that were used in the matching process were also included as covariates in the MMMC model. In the elementary analysis, mean peer prior achievement, teacher attendance, and teacher experience were not significant so they were not included in the final elementary models. In addition, for the middle school results, the number of supplemental ELA course units was insubstantial so those course exposures were not included in the final middle school models. The full specifications for both models can be found in Appendix F.

3.0 Survey Analysis

Five groups of participants were surveyed: (1) Teacher, (2) Teacher/Project Liaison, (3) Project Liaison, (4) Administrator, and (5) Administrator/Project Liaison. Twenty Cohort 1 schools began implementing the LDC program in the 2016-17 school year, with 154 classroom teachers participating and 34 administrators overseeing the work (see Table 3.1). The 20 schools included 11 elementary schools, four middle schools, one high school, two K-8 schools, one 6-12 school, and one K-12 school. Participants taught across all grade levels from K to 12. Most secondary teachers taught ELA, social studies/history, or science, with a handful teaching other subjects such as math, foreign languages, special education, or the arts.

Table 3.1
Survey Consent and Response Rates: 2016

Participant Type	N of Participants	N of Consents	N of Survey Responses	Consent Rate	Response Rate
Teacher	139	127	110	91%	79%
Teacher/Project Liaison	15	15	12	100%	80%
Total Teachers	154	142	122	92%	79%
Project Liaison	5	5	4	100%	80%
Administrator	27	21	19	78%	70%
Administrator/Project Liaison	2	2	2	100%	100%
Total Administrators*	34	28	25	82%	74%
Total Participants	188	170	147	90%	78%

*We categorize the coaches and coordinators who completed the Project Liaison survey as administrators.

Table 3.1 presents the study consent and survey response rate information. As shown, survey consent and response rates were different for teachers who implemented LDC in their classrooms and administrators. Compared to administrators, teachers had a considerably higher consent rate (92% compared to 82%) and survey response rate (79% compared to 74%). Teachers who were project liaisons were more likely to consent to participate in the study but no more likely to complete the survey. Overall, consent and response rates were quite high and were markedly improved from the pilot year of the study.

We discuss survey results according to the domains listed in Table 2.1. We also include specific questions covered in each domain for easier reference. For example, "LDC Participation (T1-4)" indicates that teacher questions 1-4 are used to provide information on LDC participation. Multiple choice survey questions and descriptive results (frequencies and means) are presented in full in Appendix B for teachers, Appendix C for project liaisons, and Appendix D for administrators. As noted earlier, these three samples are not completely mutually exclusive (i.e., some teachers and administrators also acted as project liaisons). Results are organized by domains and question number. For example, the domain of "LDC participation" is summarized in one section, and relies on information from four different questions. We preface teacher questions with "T," project liaison with "PL," and administrator questions with "A."

Survey results are presented in four sections. The first section summarizes teachers' responses. The second section summarizes project liaisons' responses, and the third section summarizes administrators' responses. 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. The fourth section summarizes open-ended responses from all participants, who answered the same four questions about program efficacy and improvement. We end with a summary of results.

3.1 Teacher Survey Results

A total of 122 teachers at 19 schools completed the survey (Table 3.*2*). One participating school did not return any teacher surveys. Of the 122 teachers who responded to this survey, 52% taught in ten elementary schools, 24% in four middle schools, 6% in two K-8 schools, and the remaining 28% of teachers taught in three schools each with a different grade range (one high school, one middle/high school, and one K-12 school). Six teachers (5%) indicated they had not participated in a professional learning community in the 2016-17 school year. Therefore, they were skipped past most of the survey questions. In the following sections, we report on each survey domain. In addition to producing descriptive statistics on the whole teacher sample, we also produced results for elementary and secondary level teachers. We highlight important differences between the two subgroups, when they are apparent.

Table 3.2
Participating Schools and Teachers in 2016-17

School Type	N of Schools	N of Teachers	% of Teachers
Elementary Schools	10	63	52%
K-8 Schools	2	7	6%
Middle Schools	4	29	24%
Middle/High Schools	1	4	3%
High Schools	1	16	13%
K-12 Schools	1	3	2%
Total	19	122	100%

LDC Participation (T1-4)

Almost all teachers (92%) reported that this year was their first experience with LDC. The remaining 10 teachers who had prior experience with LDC reported that they had taught 0 to 6 modules (mean=1.8) and 0 to 6 mini-tasks (mean=2.2) outside of modules. Three of these 10 teachers taught zero modules, and four of these teachers taught no mini-tasks.

Among the 122 teachers who completed the survey, 69 of them taught in elementary grades, and 53 taught secondary grades. The secondary teachers reported teaching 1 to 14 classes (mean=5.3); in these classes, they used LDC materials in 0 to 7 classes (mean=2.9) (Two teachers reported not using LDC materials in any of their classes). Over a third (37%) reported using LDC in ELA; 31% in history/social studies; 21% in science; 4% in mathematics; and 8% in other areas (health, Spanish, etc.) (see Figure 3.1).
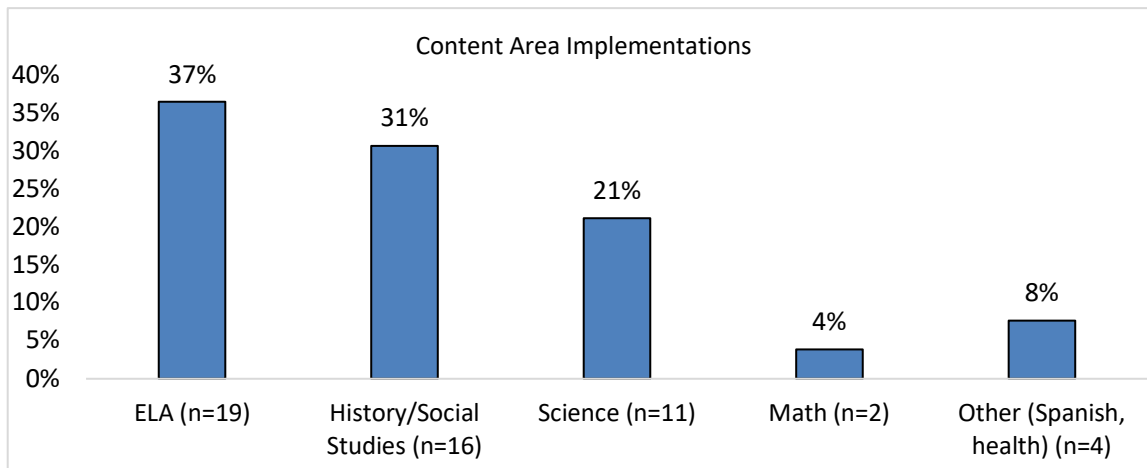

Figure 3.1. Secondary Teachers' Content Area Implementations

Professional Learning Community and Teacher Collaboration (T5-9, T30, T37)

Almost all teachers (95%) participated in a PLC that was at least partly focused on implementing LDC. The six teachers who had not participated in a PLC reported they had used LDC tools in their planning or instruction.

Almost a third (30%) of teachers reported meeting in their LDC PLC at least once a week or more. Almost half (46%) met every other week, and 24% met once a month. Of the 19 schools, teacher survey responses suggested that five met approximately once a week or more; 10 met every other week; and four met once a month. The most common reason cited for not meeting weekly was that PLC members had other priorities (59%). Other reasons cited were technology issues and the fact that teachers were not paid for the time. Interestingly, secondary teachers were considerably more likely to meet just once per month (42% compared to 11% of elementary teachers) and much less likely to meet at least once per week (10% compared to 46% of elementary teachers).

According to teachers, LDC PLC meetings most often lasted 45 minutes to an hour (72%). About a quarter of teachers (23%) reported that meetings lasted longer than an hour, and 5% less than 45 minutes. Most teachers (70%) *agreed* or *strongly agreed* that their PLCs were given sufficient time to meet. However, in the open-ended responses, 64 teachers (55% of 116 teacher commenters) indicated that time was a barrier to effective implementation. These comments included problems with time other than insufficiency, such as regularity of meetings and the need for teachers to have time outside of meetings to discuss and implement.

A third of teachers (33%) said they had informal discussions about LDC with their colleagues once a week or more; 32% every other week; 17% once a month; and 18% less than once a month. These groupings generally corresponded with the school breakdown for frequency of formal meetings. In other words, the more frequently a school's PLC met, the more likely it was for that school's teachers to also engage in informal discussions outside PLC sessions. As with formal meetings, secondary teachers reported interacting in informal settings less frequently than elementary teachers. Over three quarters (77%) of teachers *agreed* or *strongly agreed* that they were more likely to collaborate with other teachers on designing instruction after participating in LDC; 69% agreed or strongly agreed that LDC participation helped them develop working relationships with teachers in different grades or subjects.

LDC Training and Support (T10-T13)

Teachers evaluated the three main types of LDC training and support: professional learning community (PLC), online course materials, and virtual coach support during and outside of PLCs.

Teachers found PLCs to be *moderately effective* or *very effective* in the following ways: creating an environment in which teachers were comfortable working with each other (83%); demonstrating the usefulness of LDC (74%); fostering an environment where teachers shared instructional plans with colleagues (74%); allowing space for shared problem solving (70%); and helping teachers learn to develop modules (68%) (see Figure 3.2). Elementary teachers were a bit more likely to report that their PLC was effective. For example, 79% of elementary level teachers said that their PLC was *moderately effective* or *very effective* in demonstrating the usefulness of LDC, compared to 68% of secondary teachers.
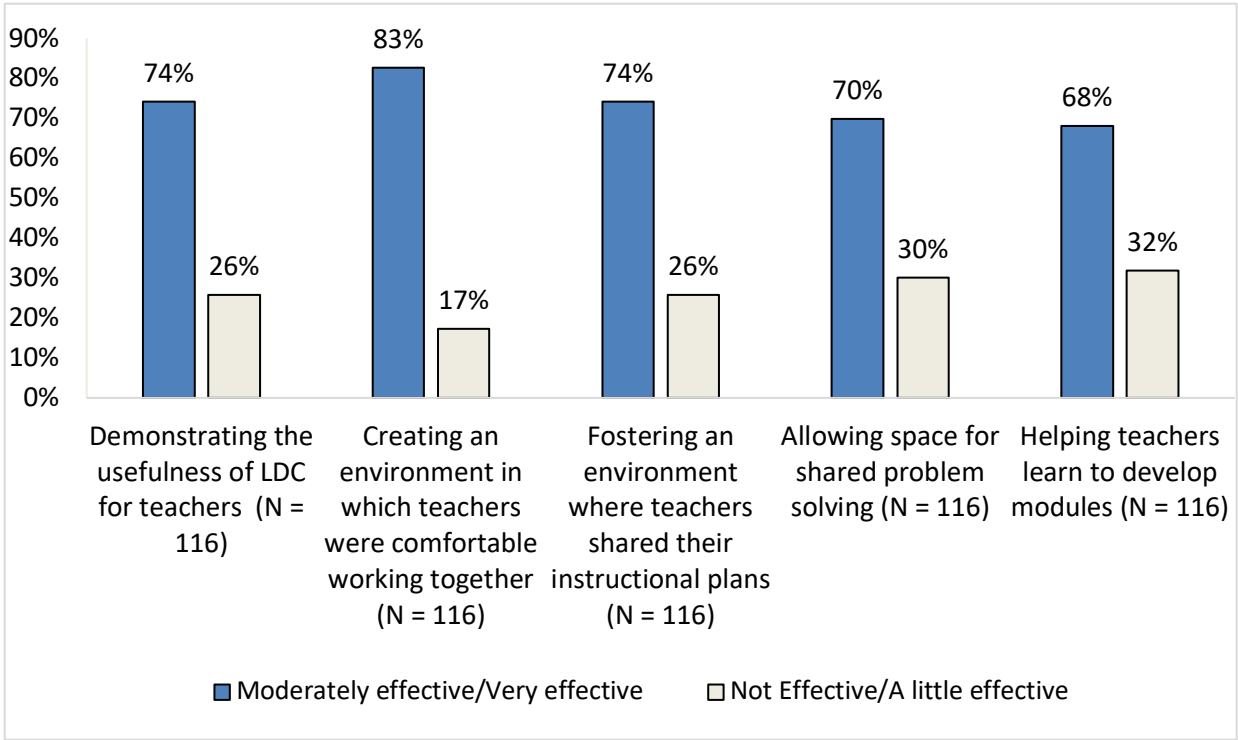

Figure 3.2. The Effectiveness of Teacher's PLC (T10)

Different aspects of the online course materials were rated as *good* or *excellent* by a majority of teachers in almost all cases including: relevance of information (68%); usefulness of resource documents such as the LDC Pitfall Checklist (56%); usefulness of videos (52%);

helpfulness in creating modules (51%); opportunity to extend learning (59%); and ease of use (47%) (see Table 3.3).

Table 3.3
Rating Online Course Materials (n = 116)

	Poor	Fair	Good	Excellent
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?				
Clarity of information presented	9%	26%	48%	17%
Relevance of information presented	8%	24%	47%	21%
Ease of use	16%	37%	38%	10%
Usefulness of resource documents (e.g., LDC Pitfall Checklist, CCSS Mental Markers, etc.)	16%	28%	44%	12%
Usefulness of videos	17%	31%	40%	12%
Degree to which course material helped me to create and/or adapt LDC modules	11%	38%	39%	12%
Opportunity to extend learning when needed or desired	14%	28%	43%	16%

Most teachers (91%) said they were able to get the feedback and support they needed from their LDC coach and that coaches provided written feedback in a timely manner (87%). In addition to direct support during PLCs, the following types of asynchronous coach support were found to be *moderately* or *very helpful* by about half or more of teachers: written feedback in CoreTools (62%; 21% did not use); individual Zoom conference (60%; 22% did not use); email or phone communication (51%; 32% did not use), and facilitated discussion on Teaching Channel Teams (43%; 35% did not use).

LDC Implementation (T14 -28, T30)

This domain covers questions on module creation (T14-17), module peer review (T27-28), and classroom implementation (T18-26, T30).

Module Creation (T14-17) and Module Peer Review (T27-28). Teachers adapted or created two types of LDC instructional products: mini-tasks are short, generally taking one period, and focus on a specific skill; modules are longer, more complex units comprised of multiple mini-tasks, ending in a culminating "teaching task."

Using existing LDC templates and exemplars, teachers individually or collaboratively adapted between 0 and 12 modules during the year (mean=1.6). Among the 104 teachers

who answered this question, 17 teachers (16%) adapted no modules, 80 teachers (77%) individually or collaboratively adapted between one and three modules during the year, six teachers (6%) adapted four to six modules, and one teacher (1%) reported adapting 12 modules. The mean number of modules teachers adapted was 1.6 modules. Creating modules from scratch, teachers individually or collaboratively constructed 0 to 4 modules (mean=1.1). Twenty-eight teachers (27%) constructed no new modules, 67 teachers (55%) individually or collaboratively constructed one or two modules, and nine teachers reported (8%) either three or four modules. Among these 145 teachers, the mean number of modules created was 1.1 modules. Elementary teachers chose to adapt modules more often than secondary teachers, while secondary teachers were much more likely to create new modules from scratch (27% of secondary teachers reported adapting zero modules and 40% of elementary teachers reported creating zero new modules).

Teachers reported how they constructed modules. Some teachers created more than one module during the year using different collaboration structures. Half of teachers (50%) worked in teams of two or more to create modules. Over a third (36%) created modules individually. Less than a quarter (23%) wrote modules with the entire PLC. Ten percent of teachers reported "other," with a few specifying that they did not write modules at all or that they wrote mini-tasks instead.

Reflecting on the instructional strengths of their modules, most teachers felt confident in their ability to execute all eight of the instructional features of LDC modules that were tracked: teachers reported being able to select focus standards for the writing assignment (88% felt they were able to accomplish this to a *moderate* or *great extent*); create a standards-driven writing assignment (83%); identify the skills needed to complete the assignment (78%); create an assignment that provided multiple opportunities for student engagement (77%); select high quality texts (73%); make connections to previous or future learning (68%); create daily skills lessons (65%); and plan multiple methods to assess progress (61%).

Of these eight features of module creation, the first three elements in Table 3.4 below had the highest percentage of teachers who felt they had accomplished it to *a great extent*, indicating a higher level of confidence than for the other aspects of assignment planning. Those skills were selecting focus standards (47% felt they had accomplished this to a great extent); creating a standards-driven assignment (38%); and providing multiple opportunities for students to engage (31%). For the other five elements, the percentage of teachers who felt they had achieved it to a great extent ranged from 15% to 27%.

Table 3.4
Rating on Teacher Skills Associated with Creating LDC Modules and/or Mini-tasks (n = 116)

	Not at all	A little bit	A moderate extent	A great extent
Please indicate to what extent you were able to do each of the following when creating LDC modules and/or mini-tasks.				
Select a set of focus standards for a writing assignment	3%	9%	41%	47%
Create a standards-driven writing assignment task	4%	13%	45%	38%
Select high quality, complex texts and other materials that allowed students to engage in deeper learning	5%	22%	48%	25%
Create a writing assignment that provided multiple opportunities for students to engage with the material	9%	15%	46%	31%
Identify the skills students need to develop in order to complete a writing assignment	6%	16%	52%	27%
Create daily lessons to teach the skills a student needs to complete a writing assignment	9%	27%	44%	21%
Plan for a variety of methods to assess student progress (e.g., mini-task scoring guides)	9%	30%	47%	15%
Make connections to previous or future learning that make a writing assignment relevant for students	9%	23%	46%	22%

Classroom Implementation (T18-26, T30). After creating their modules, teachers implemented modules in their classrooms and reflected on their progress. Teachers implemented 0 to 6 modules (mean=1.7) and implemented from 0 to 20 mini-tasks (mean=2.6) that were not part of modules (see

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Table 3.5 for more information). A very substantial proportion of teachers (54 out of 116) therefore did not implement the recommended 2 modules over the course of the school year. Teachers submitted 0 to 4 modules (mean=0.7) for LDC National Peer Review. Of the 54 teachers who reported submitting modules for peer review, four (7%) found the process very helpful, 19 (35%) moderately helpful, 19 (35%) a little helpful, and 12 (22%) not helpful.

Table 3.5
Number of Modules and Mini-Tasks Implemented (n = 116)

Numbers of Modules or Mini-tasks implemented in 2016-17	N of Teachers Implementing Modules	N of Teachers Implementing Mini-Tasks
0	10	23
1	44	24
2	44	32
3	14	13
4	2	9
5		3
6	2	2
7		1
8		2
10		4
14		2
20		1

Teachers reflected on their ability to provide instruction through the modules. Across all six dimensions, the distribution of teachers who felt they were able to implement effective instructional strategies through the modules was high: 78% felt they had engaged students in productive struggle to a moderate or great extent; 77% differentiated instruction; 72% located performance of standards in student work; 69% used evidence of learning to modify instruction; 68% shared expectations of learning with students; and 65% systematically collected information about student learning. Also across all six dimensions, the percentage of teachers who felt they had accomplished these strategies to a great extent ranged from 22-27%, indicating that about a quarter of teachers felt very confident about their ability to implement high quality instructional strategies using LDC modules.

The One-Text One-Week module was introduced as a first step toward module creation. As its name indicates, the module highlighted one text that was examined closely over one week. Fourty percent of teachers taught a One-Text One-Week module. Of those teachers, 61% created the module from an LDC template, while the remaining 39% copied and adapted another teacher's module from the LDC online library.

Following the One-Text One-Week modules, teachers typically worked on a longer-term instructional module. Just over half of teachers (53%) copied and adapted another teacher's module from the LDC online library, while 47% created a module from an LDC template.

Elementary teachers were more likely to have adapted an existing module (about two thirds did so), while secondary teacher were more likely to have created new modules from a template (again about two thirds of the subgroup). Over two thirds (68%) of teachers had already taught this module during the school year at the time of the survey administration, while 15% planned to teach it before the current school year ended, 14% planned to teach it the following school year, and 3% had no plans to teach the module.

Leadership Support (T32-36)

This domain covers questions on project liaison support and administrator support (T32-33) and teacher leadership role in LDC (T36).

Project Liaison Support (T32). Project liaisons were school staff, either participating LDC teachers or school administrators, who provided logistical support to the PLCs. Responses indicated that the vast majority of teachers were very satisfied with the level of project liaison support. The project liaisons were approachable (90% *agreed* or *strongly agreed*); gave useful feedback (77%); effectively supported the PLC meetings (84%); had a strong grasp of LDC (85%); helped teachers align LDC to broader school goals (79%); and effectively invited teachers to join LDC (78%). Again, there was a difference between elementary and secondary teachers, with secondary teachers somewhat less likely to express confidence in their project liaison.

School Administrator Support (T33-35). 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. Almost all teachers (94%) *agreed* or *strongly agreed* that their administrator encouraged LDC participation. According to teachers, most administrators were able to ensure PLCs had time to meet (79%); communicate how LDC supported school initiatives and goals (75%); and had a firm understanding of LDC (72%). Most administrators reportedly also made formative assessment a priority (69%). Less than half reported that their administrator had provided feedback about LDC planning and instruction (47%). A minority of teachers reported that administrators expressed concern that LDC was taking time away from other instructional priorities (41%).

The involvement of school administrators, as reported by teachers, was varied. Over a third (35%) attended more than three quarters of PLC meetings, but a similar number (28%) attended less than one quarter. Ten percent attended about one quarter, 17% attended about one half, and 10% attended about three quarters. The majority of teachers (58%) reported never being observed by an administrator while teaching an LDC mini-task. A quarter (25%)

reported being observed once; 10% were observed twice; and the remaining 8% were observed three or more times.

Teacher Leadership Role (T36). The role of teachers in LDC extends beyond the classroom. As teacher leaders, LDC teachers are pivotal in driving LDC implementation in their schools. Most teachers *agreed* or *strongly agreed* that LDC helped them create writing assignments within their current curriculum (78%). About half of teachers felt they were able to affect the direction of LDC at their site by having the opportunity to work with the project liaison and administrator (54%); setting instructional goals for LDC work (53%); and being involved in discussions about expanding LDC implementation in future years (48%). Over half of teachers (59%) expressed interest in learning more about facilitating LDC implementation at their schools. Here as well differences were observed between school levels. While a majority of elementary teachers felt empowered by the LDC experience, less than half of secondary teachers indicated that they had played or would like to play a leadership role in LDC.

LDC Impact (T29-31)

This domain covers questions on LDC impact on teacher practice and learning (T29-30) and student learning (T31).

Impact on Teacher Practice and Learning (T29-30). 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 more information about the impact of LDC on their instructional practice.

Over all eight items concerning change in ability during the year, about two thirds to three quarters of the teachers rated themselves as having improved moderately or a great deal. Specifically, the areas teachers were most likely to perceive improvement concerned instructional planning: identifying skills needed to complete an assignment (77%); selecting focus standards (76%); and creating high quality writing tasks (71%). The other areas of impact on teacher practice and learning for which teachers were less likely to perceive impact involved collecting and using student data to inform instruction: assessing student progress (66%); using evidence of student learning (66%); tracking and analyzing student progress (61%); and identifying student misconceptions (60%). These self-ratings correspond with the high emphasis placed during PLCs on designing instructional units.
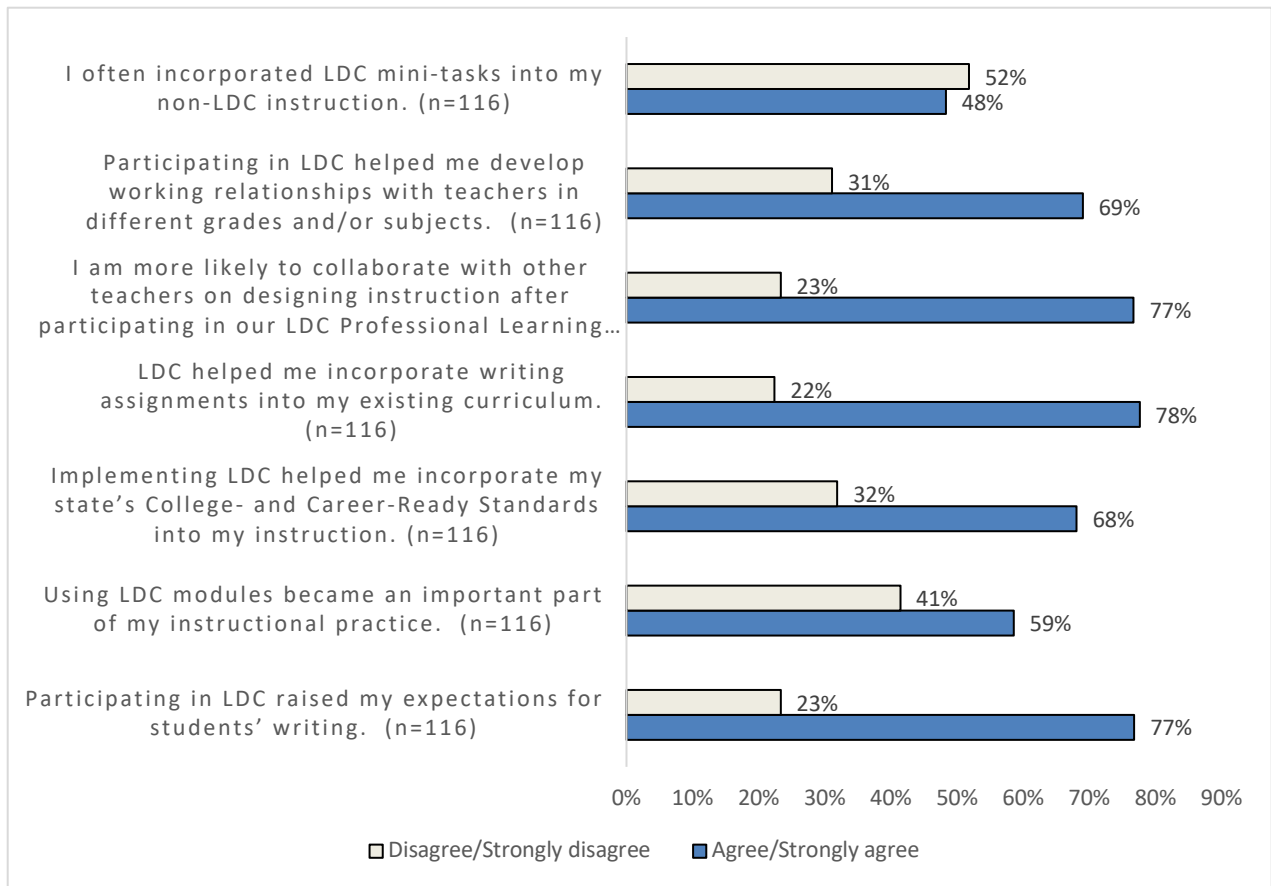
Figure 3.3. Impact on Teacher Practice and Learning (T30)

The areas of widest reported LDC impact on teacher practice (see Figure 3.3) included helping teachers incorporate writing assignments (78% *agreed* or *strongly agreed*); likelihood of teacher collaboration (77%); and raising expectations for student writing (77%). LDC also had slightly narrower but still apparent impact in the following areas: development of relationships with teachers outside grade or subject (69%); incorporating state standards (68%); establishment of LDC as a part of existing instructional practice (59%); and incorporating LDC mini-tasks into non-LDC instruction (48%).

Impact on Student Learning (T31). Teachers were asked to evaluate the effect of LDC on student learning (see Table 3.6). On average, about three quarters of teachers *agreed* or *strongly agreed* that LDC impacted student learning in the following ways: supported students to complete writing assignments (78%); developed skills needed for college and career readiness (78%); increased student capacity to analyze components of the writing task (77%); improved overall literacy performance (77%); increased content knowledge (74%); developed speaking and listening skills (74%); improved quality of writing skills (72%); and

developed reading skills (68%). Across all items, secondary teachers were a bit less likely to agree that LDC had impacted student learning than elementary teachers. While three quarters or more of elementary teachers tended to report positive impact, typically only two thirds of secondary teachers did.

Table 3.6

Impact on Student Learning (n = 104)

	Strongly Disagree	Disagree	Agree	Strongly Agree
Please indicate the degree to which you agree or disagree with the following statements.				
LDC helped students develop reading skills.	10%	22%	60%	9%
LDC was effective in improving students' content knowledge.	11%	15%	64%	10%
LDC modules effectively supported students in completing writing assignments.	8%	14%	64%	14%
LDC was effective in improving the quality of students' writing.	9%	19%	60%	13%
LDC supported students' development of skills needed for college and career readiness.	8%	14%	66%	12%
LDC increased students' capacity to analyze and understand the components of a writing assignment task.	9%	14%	65%	12%
LDC helped students develop speaking and listening skills.	10%	16%	60%	14%
Overall, LDC helped improve students' literacy performance.	9%	14%	64%	14%

Facilitators and Barriers (T37)

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). Over three quarters (77%) agreed or strongly agreed that their school had adequate technology to support teachers' use of LDC. Most teachers (70%) felt their PLC was given sufficient time to meet, although the majority of teachers cited time as a barrier in the open-ended responses. Most teachers were able to easily find and adapt LDC mini-tasks indicating that they were

able to use the CoreTools online platform successfully (65%). Over half of teachers (60%) felt adequately prepared to implement modules in the classroom, leaving 40% who felt they needed more support. About half of teachers (51%) found it challenging to find content-rich texts to use with LDC modules.
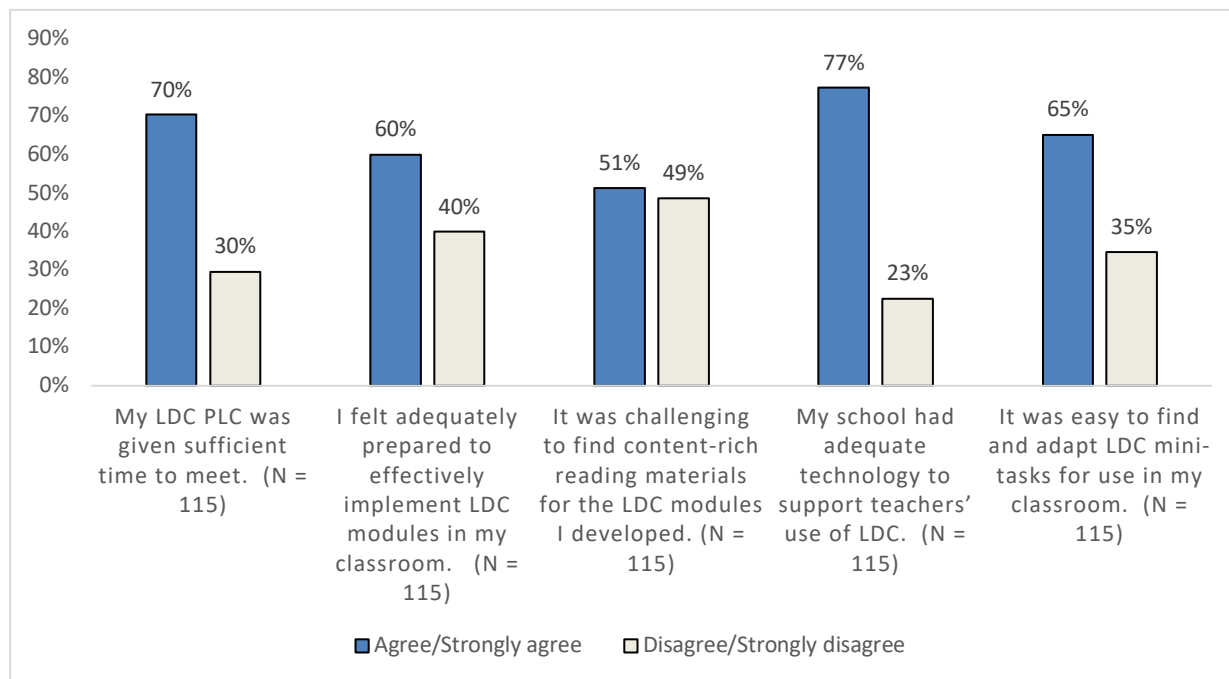
Figure 3.4. Facilitators and Barriers (T37)

3.2 Project Liaison Survey Results

This section presents the survey results from school-level project liaisons. At each school, the project liaison coordinated PLC meetings with LDC coaches. Project liaisons were participating teachers, school administrators, or other school support staff. A total of 18 project liaisons responded to the survey.

LDC Participation (PL1-2)

Of the 18 project liaisons who responded, 16 (89%) reported that they did not have prior experience with LDC.

Professional Learning Community and Teacher Collaboration (PL3-6)

Less than half (39%) of project liaisons reported that their PLCs met once a week or more frequently. The 11 project liaisons whose PLCs did not meet weekly reported that the

primary barriers were that PLC members had other competing priorities (39%) and that PLC time was not protected (33%).

Almost all project liaisons (83%) said these meetings lasted 45 to 59 minutes. A small minority (11%) said meetings were less than 45 minutes, and one liaison (6%) said they were 60-74 minutes. Nearly a third (28%) reported that they had informal discussions about LDC with teachers once a week or more.

LDC Training and Support (PL7-12)

Project liaisons evaluated the effectiveness of the various training and support methods provided during LDC implementation. These included PLC meetings, online course material, and coach support.

Project liaisons overwhelmingly reported that the PLC meetings were effective. More than three quarters of project liaisons (78%) thought PLC meetings were *moderately* or *very effective* in helping teachers learn to develop modules, and 72% said their PLC was effective in each of the following ways: created an environment in which teachers were comfortable working with each other; allowed space for shared problem solving; fostered an environment where teachers shared instructional plans with colleagues; and demonstrated the usefulness of LDC to teachers.

Online course materials used by the coaches during PLC meetings also received high ratings from the project liaisons. Most project liaisons (83%) rated the clarity of information as *good* or *excellent*; 83% for relevance of information; 78% for ease of use; 78% for usefulness of resource documents; 78% for opportunity to extend learning when needed or desired; 67% for helpfulness to teachers in creating modules; and 61% for usefulness of videos.

LDC coaches were highly regarded by project liaisons. All (100%) reported that they were able to get the feedback and support they needed from LDC coaches, and 94% 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 project liaisons as *moderately* or *very helpful*. These supports were: individual video conferencing with coaches (83% helpful; 6% did not use); email or phone communication (78% helpful; 6% did not use); written feedback in CoreTools (67% helpful; 22% did not use); and coach-facilitated discussions on Teaching Channel (33% helpful; 50% did not use). All project liaisons (100%) *agreed* or *strongly agreed* that they were able to reach their coach with questions; 95% said their coach responded quickly; 95% said the coach was knowledgeable and provided high quality guidance; 89% thought their coach was easy to work with; 89% said coaches

connected them with additional resources when needed; and only 33% of project liaisons reported that it was challenging to structure PLC time with the coaches.

Project liaisons 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 3.4, with a range of 0 to 20. The majority (71%) participated in one or two meetings; 6% attended no meetings.

Finally, project liaisons provided feedback about non-coach LDC support. A large Majority of project liaisons (78%) believed LDC offered sufficient professional learning opportunities to help them lead the initiative at their school, and 89% agreed that LDC provided adequate technical support for issues with the CoreTools online platform.

LDC Implementation (PL 13-16, PL20)

This domain covers questions on module creation (PL13-16) and alignment (PL20).

Module Creation (PL13-16). Project liaisons 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.

Project liaisons were asked how many LDC modules were created by their PLC members, either individually or collaboratively by adapting them from existing modules created in a prior year or found in the LDC Library in CoreTools. Answers ranged from 0 to 2, with a mean of 1.4. Project liaisons reported that their PLCs created from scratch, either individually or as a group, 0-11 modules, with a mean of 1.9. Modules were most commonly created via a collaborative process, either by teams of two or more teachers (39%) or by the PLC as a whole (22%).

In general, project liaisons were extremely confident in their ability to carry out targeted instructional practices while creating their modules. All project liaisons (100%) felt they were able, to a *moderate* or *great extent*, select focus standards for the writing assignment; 94% provided multiple opportunities for students to engage with the assignment; 89% identified the skills students needed to complete the writing assignment; 83% were able to select high quality texts and other materials; 83% created daily lessons to teach the necessary skills; 78% made connections to previous or future learning to make the assignment relevant for students; and 61% planned for a variety of ways to assess student progress.

Alignment (PL20). Project liaisons 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 (83%) *agreed* or *strongly agreed* that LDC complemented other initiatives at the school; 83% viewed LDC as a strategy for implementing statewide college and career-ready standards; 78% said LDC helped teachers create writing assignments to use within their existing curricula; 72% thought LDC helped prepare students for state assessments; 56% reported their school connected LDC to specific school goals; and only 50% reported that time spent on LDC interfered with other initiatives. Notably, however, almost three quarters (72%) believed that it was difficult for teachers to focus on LDC because of other competing priorities at the school.
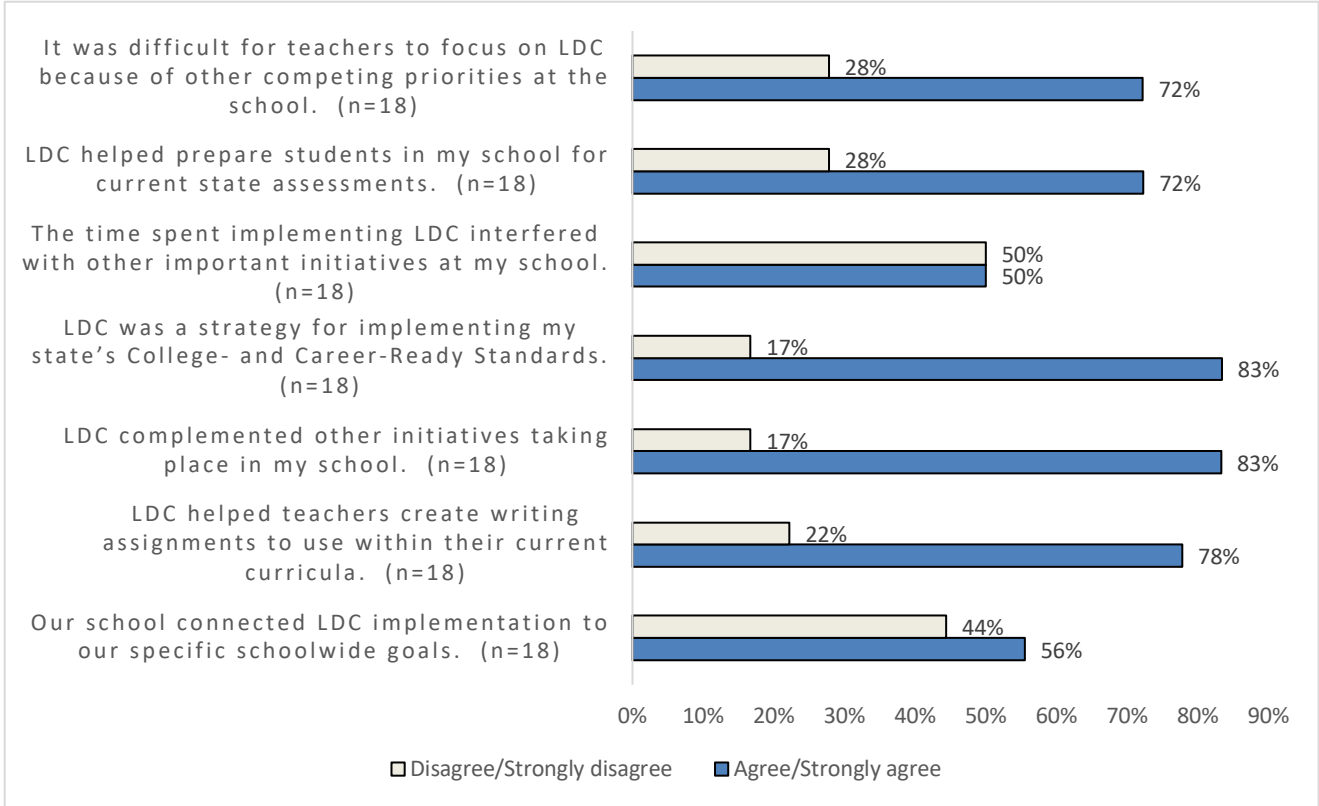

Figure 3.5. LDC Alignment (PL20)

Leadership Support (PL17-19, PL22)

This domain covers questions on school administrator support (PL17-18), project liaison leadership role (PL19), and district support (PL22).

School Administrator Support (PL17-18). Project liaisons reported on school administrators' involvement with LDC. Over a third (38%) reported their administrators

attended less than a quarter of PLC meetings; 25% about a quarter; 6% about half; 13% about three quarters; and 19% more than three quarters.

All project liaisons (100%) reported their administrators encouraged teachers to participate; 81% said their administrators had a firm understanding of LDC; 69% reported their administrators made formative assessment a priority at their school; 69% felt planning time for LDC was protected; 63% said their administrator communicated how LDC supported other school goals and initiatives; 44% of project liaisons reported that their administrators expressed concern that LDC was taking time away from other instructional priorities; and 38% said they received feedback about their LDC leadership from their administrator.

Project Liaison Leadership Role (PL19). Project liaisons reflected on their leadership role in LDC implementation at their school sites. Overall, results were very positive and indicated that the majority of project liaisons felt engaged by and invested in the LDC implementation at their school. Almost all (88%) *agreed* or *strongly agreed* that they met regularly with their LDC coach to manage the work plan; 75% felt they were able to build capacity as an instructional leader as a result of their LDC leadership role; 69% helped set instructional goals for LDC implementation; 69% were involved in planning how to meet teacher learning needs by differentiating LDC implementation; 56% were involved in discussions about how to expand LDC implementation in future years; 56% believed their role as LDC project liaison helped them advocate for additional resources on their campus; and 44% met regularly with their school administrator.

District Support (PL22). Almost all project liaisons (83%) *agreed* or *strongly agreed* that district leaders supported implementation of LDC: 72% agreed that district leaders were interested in implementing LDC at other schools; 72% reported that district leaders visited their school to discuss LDC implementation; 67% thought district leaders had a firm understanding of LDC; and 56% said that district professional development efforts aligned with LDC.

Scale-up and Sustainability (PL21)

Regarding the future of LDC implementation, most project liaisons (72%) *agreed* or *strongly agreed* that they expected most teachers to continue with LDC the following year; 72% felt teachers and administrators were committed to sustaining the initiative; and 67% expected their LDC PLC to increase in size the following year (see Figure 3.6). Generally, however, they did not believe LDC had yet reached beyond the PLC, with only 33% reporting that new collaborations were launched as a result of LDC and 28% reporting that non-LDC teachers used LDC resources, such as the planning process or CoreTools.
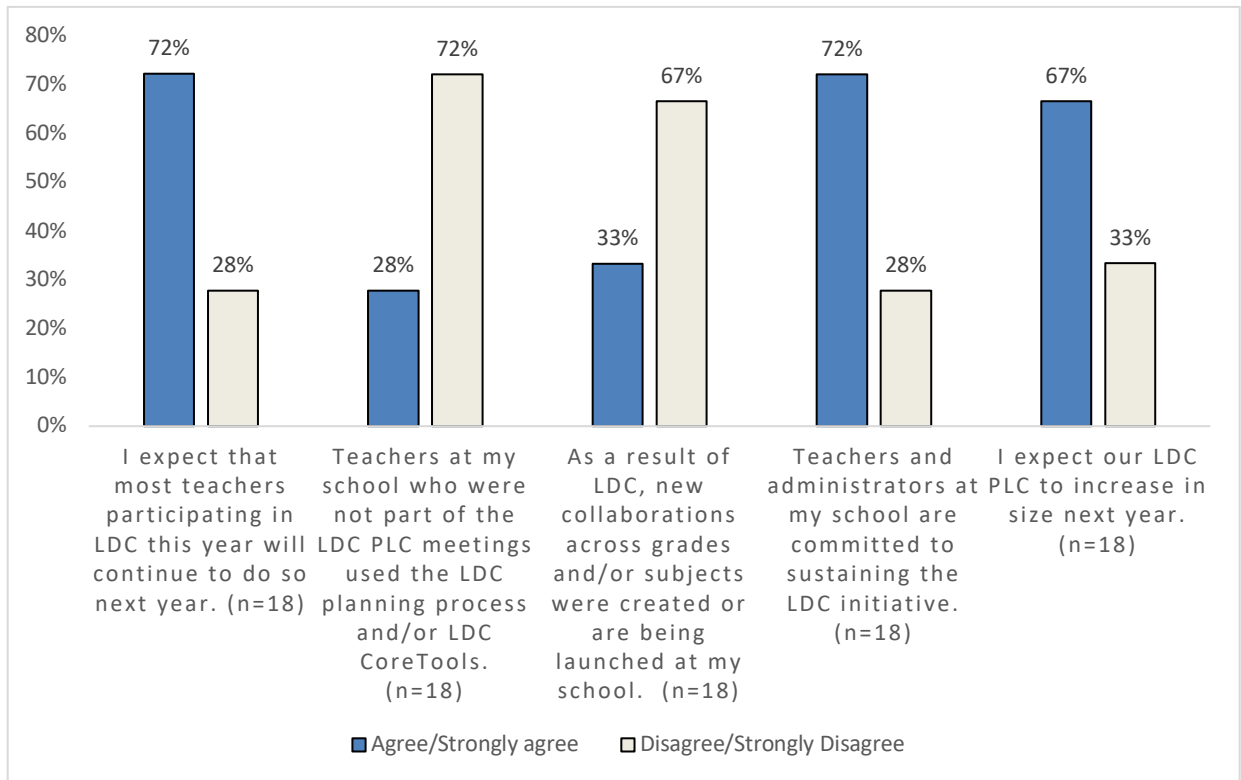
Figure 3.6. Scale-up and Sustainability (PL21)

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 21 school administrators who responded to this survey, 14 (67%) were principals and seven (33%) were assistant principals. Administrators reported that they attended relatively few sessions of LDC PLCs, with 35% attending less than one quarter, 15% attending about one quarter, and 20% attending about a half. Another 10% reported attending three quarters, and 20% attended more than three quarters. These numbers show some variation from teachers' and project liaisons' report of administrators' attendance at meetings. Particularly, 35% of teachers reported that administrators attended more than three quarters of PLC meetings (in comparison to 20% as self-reported by administrators); it is possible, however, that teachers conflated other administrators (such as the district LDC project lead) with the principal or assistant principal who received this survey.

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. Over half (55%) attended two of these offerings. The range was 0-5, with an average of 1.85.

Interactions with LDC were overwhelmingly positive. Almost all administrators agreed or strongly agreed that they were able to reach LDC staff with questions (95%); their school had adequate technology to access LDC (90%); LDC staff were able to connect them to additional resources (85%); LDC offered sufficient professional development for project liaisons (80%); and there were sufficient professional development opportunities for administrators (75%).

Classroom Observation (A5-6)

Almost half (45%) of administrators reported observing teachers implementing LDC three to five times during the year, while 40% observed 1 to 2 times, 10% observed six or more times, and 5% did not observe at all. These figures corroborate teachers' reports of being infrequently observed, with 58% of teachers reporting that they were not observed at all during the school year, and 25% of teachers reporting one observation. In general, classroom observation was not a frequently used support structure.

Almost all administrators (84%) who observed LDC instruction believed that LDC modules were *moderately* or *very effective* in developing students' literacy skills.

Impact on Teacher Practice (A7)

A majority of administrators observed significant improvement in all areas of teacher practice probed on: 85% believed teachers had improved *moderately* or *a great deal* in selecting focus standards; 85% in identifying necessary skills to complete the writing assignment; 85% in creating standards-driven writing tasks; 75% in using evidence of student performance to shape instructional decisions; 70% in tracking and analyzing student progress in a systematic way; 70% in creating daily lessons to teach skills to complete the writing task; 70% in assessing students' progress as they completed the writing task; and 70% in identifying patterns of student understandings or misconceptions.

Impact on Student Learning (A8)

Administrators were almost universally positive about the effects of LDC on students. Large majorities of administrators *agreed* or *strongly agreed* that LDC helped students' overall literacy performance (95%); LDC supported students' college and career-ready skills (95%); LDC modules effectively supported students' writing (90%); LDC improved students' writing

quality (90%); LDC improved students' content knowledge (85%); LDC helped students understand components of the writing task (85%); LDC helped students develop reading skills (80%); and LDC helped students develop speaking and listening skills (80%).

Administrator Leadership Role (A9)

Almost all administrators felt they played an active role in LDC implementation: 85% *agreed* or *strongly agreed* that they made changes to school schedules to accommodate LDC PLC time; 80% were able to shape LDC implementation at their schools; 72% met regularly with the LDC project liaison; 70% were involved in discussions about differentiating LDC implementation to meet teacher needs; and 60% led discussions about how to expand LDC implementation in future years.

Alignment (A10)

Administrators reflected on how well LDC aligned with other school initiatives, programs, and curricula (see Figure 3.7). Majorities of administrators *agreed* or *strongly agreed* that LDC was a strategy for implementing state college and career-ready standards (85%); LDC helped teachers create writing assignments to use within current curricula (85%); LDC complemented other initiatives at the school (80%); LDC helped students prepare for state assessments (65%); and that their school connected LDC to specific schoolwide goals (65%). Survey responses suggest that at least in some sites other initiatives being implemented simultaneously created a challenge, with about a third (35%) of administrators believing that the time spent on LDC interfered with other initiatives, and 70% reporting that it was difficult for teachers to focus on LDC because of other competing priorities.
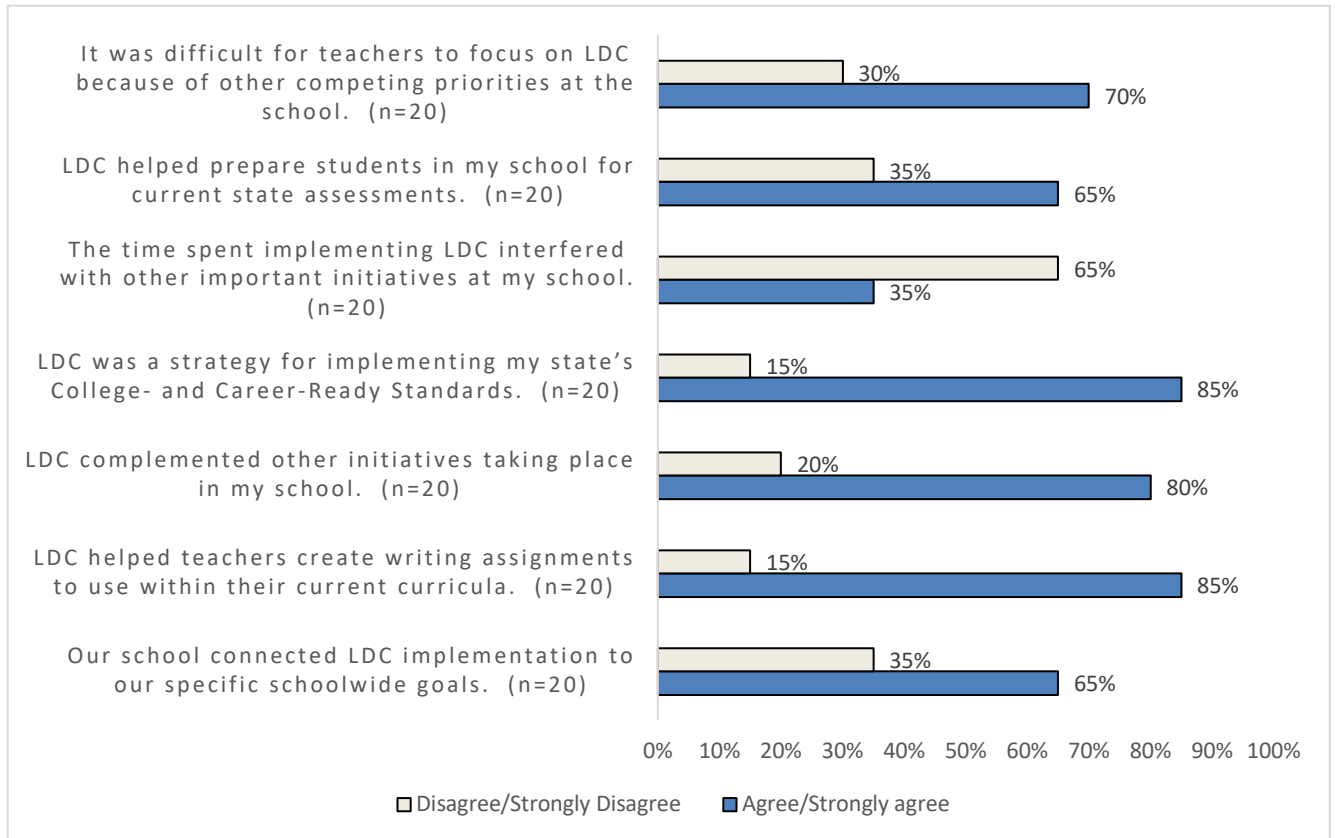
Figure 3.7. LDC Alignment (A10)

Scale-Up and Sustainability (A11)

The outlook for LDC implementation in future years was moderately positive according to administrators, as reported in Figure 3.8. Over two thirds (70%) *agreed* or *strongly agreed* that teachers and administrators were committed to sustaining LDC; 70% expect most teachers to continue the following year; 55% expected the LDC PLC to increase in size; and 40% of administrators observed new collaborations across grades and/or subjects. A small minority (15%) observed teachers who were not in LDC using the LDC planning process and tools.
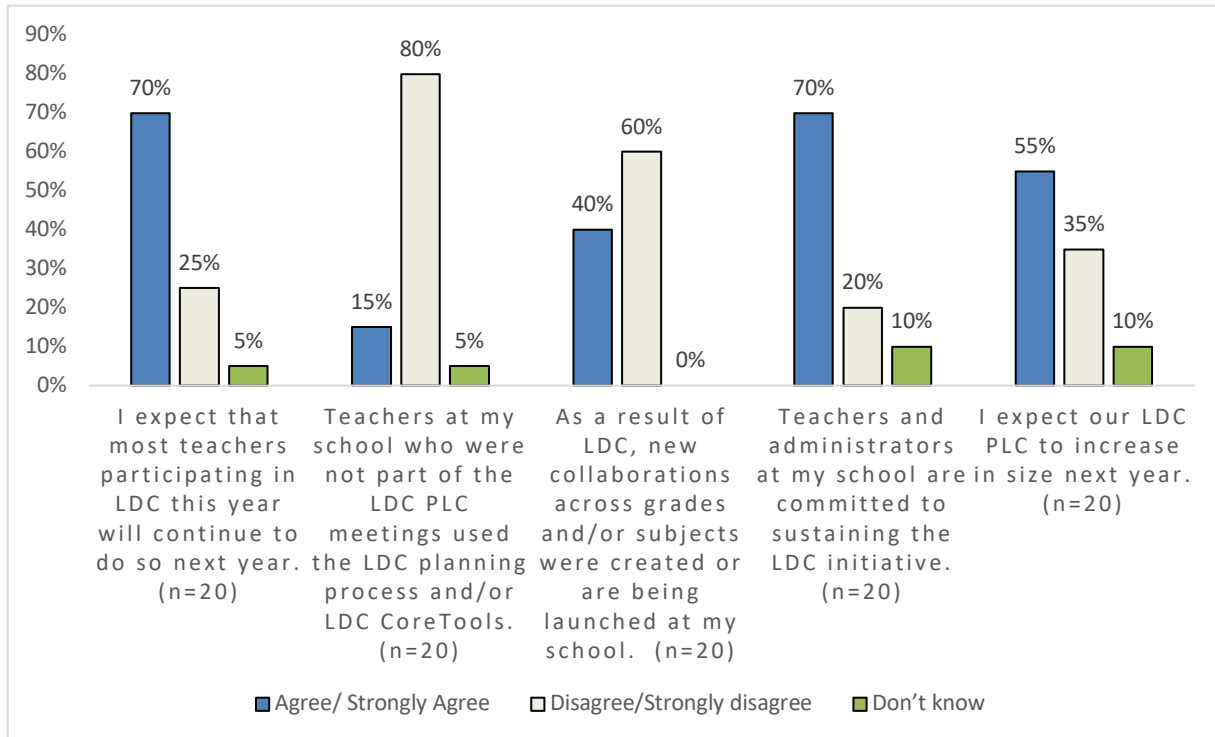
Figure 3.8. Scale-up and Sustainability (A11)

District Support (A12)

Almost two thirds (65%) of administrators *agreed* or *strongly agreed* that district leaders supported the implementation of LDC; 55% reported that district leaders visited the school to discuss LDC implementation; 45% thought district professional development efforts were aligned with LDC; 45% agreed that district leaders were interested in expanding LDC to other schools; and 35% thought district leaders had a firm understanding of LDC.

3.4 Open-Ended Responses for All Participants

Each survey respondent had the opportunity to provide open-ended feedback in response to three questions: (1) What supports did you find the most useful and why?; (2) What supports were not helpful and why?; and (3) In what ways could LDC implementation be improved in your school in the future?

Below are the summary findings across all three groups of respondents, including comments from 103 teachers, 18 project liaisons, and 18 administrators. Eighteen teachers (18%) reported they found all supports helpful, as did 11 project liaisons (61%), and 5 administrators (28%). Six teachers (5%) commented that no part of the intervention was helpful. It is important to note that the majority of responses to all survey questions were

positive; with few exceptions, the specific concerns described below belong to a minority of respondents who felt strongly enough to comment in the open-ended response section.

Professional Learning Community

Weekly meetings with the LDC PLC received 20 positive comments, 18 of which were from teachers who nearly all commented that they appreciated the opportunity to collaborate with other teachers.

The most common suggestion for improving LDC implementation in the future was to provide more protected time for the PLC. Time was mentioned at least 71 times, with related requests for 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. Teachers were very positive about the content of the PLCs, and were most disappointed with the logistical issues (e.g., difficulty scheduling meetings, competing requirements, technology issues). As one teacher put it, "The professional development part of the LDC was really powerful in that it gave us a protected hour per week in which we worked on lessons that mattered, that had scope and depth and were standards-based. I cherished that hour to improve my practice!"

At least eight comments were made about needing an earlier start or more support to get the implementation off the ground. One teacher elaborated: "It would have been nice to have done this at the beginning of the year in order to start the year with full lessons ready to be implemented." A handful of teachers specifically requested summer training and earlier start dates. A few teachers commented that they were given no choice about participation. One teacher would have appreciated "discussions prior to being implemented. I felt it was just thrown at me and I resent that." Overall, there were nine comments, almost all from teachers, who felt that increased teacher buy-in was necessary in order for LDC to succeed at their sites.

There were at least 24 comments about needing more institutional support. Notably, 10 administrators (56%) requested more support from either the district or from LDC. Other requests for support were more specific to the PLC, such as expanded content in the CoreTools library.

There were seven suggestions to add more teachers to PLCs by expanding across grade levels, subjects, or the entire school.

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 project liaisons in the context of coaching. There were 49 comments indicating that in-person coaching was one of the most useful supports, and 31 comments indicating that it was insufficient. These negative comments universally communicated the sentiment that the PLC did not receive enough or any in-person coaching. Several respondents said there was no substitute for in-person support. For at least a handful of respondents, in-person coaching was a necessary component of successful LDC implementation.

Likewise, the second most common request among suggestions for improvement was to receive more in-person support, with 14 requests. Those that were more specific asked for help with seeing model lessons implemented in real time and in-person, individualized support.

Some respondents applied their positive comments to both virtual and in-person coaching supports. One teacher differentiated the two in this way: "In-person coaching was useful because it helped me become more familiar with navigating through CoreTools and was able to get a better understanding of where I was headed and how to get there. It also gave me the opportunity to get immediate feedback. Virtual coaching helped lead, direct, and assist with maintaining focus."

Whether in person or virtually, teachers appreciated receiving feedback, which was mentioned 10 times. Teachers appreciated feedback in any format, whether via individual Zoom conferences, during PLC conferences, via email, or the CoreTools and Teaching Channel platforms.

Coach (virtual)

LDC coaches were the most frequently mentioned item, with 60 comments that they were one of the most useful supports and 28 comments that they 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 and Teaching Channel.

Among the positive mentions, respondents praised coaches' feedback and guidance in navigating LDC website content like CoreTools, the library of modules, and the online courses. They appreciated the ability to ask questions and receive immediate feedback. They also

appreciated one-on-one videoconferences with coaches and written feedback via CoreTools, Teaching Channel, and email.

Respondents who felt virtual coaches were not helpful cited technical problems as the most common issue. Across all groups, there were 29 mentions of technology being a problem, and zero positive comments 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 several teachers mentioning that a mid-year switch in coaches resulted in noticeable improvement. Several respondents just felt uncomfortable with the medium and preferred in-person, more traditional methods. Notably, among suggestions for improvement, 49 comments were made about requesting more in-person coach visits, while no participants requested more video conferences.

CoreTools

CoreTools received 60 positive comments, and 47 negative comments. Included in this count were comments about the content of the LDC library, most of which were positive. Although there were a large number of positive mentions, participants generally did not explain why they found CoreTools to be so useful.

On the other hand, participants who struggled with CoreTools were very specific: there were dozens of complaints about the user interface and how difficult it was to use the site. The three most commonly cited barriers to mastering use of CoreTools were ease of use, lack of time to explore, and lack of appropriate modules. A few science teachers were unhappy to discover that there were very few resources available to them. Three of them were upset that they were creating free curricular content for the LDC library and reaping none of the library's benefits. One teacher said, "Right now I can find lessons easier on Google. This gives me less incentive to use LDC because I feel like I am only contributing but I am not receiving any benefits when it comes to the science modules."

Online courses

Online courses received only two mentions (both positive) in the survey, indicating that this support was not widely used among these participants.

Teaching Channel

Teaching Channel resources, including videos and discussions, were mentioned five times altogether: one positive mention and four negative mentions. As with online courses, it did not appear from the comments that this was widely used resource.

3.5 Summary of Results

This survey captured the responses of 78% of all participants in the district's first 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:

- Across all participant groups, survey responses showed positive attitudes toward LDC. All measures of satisfaction or improvement were rated positively by more than half of respondents.

- Three quarters of teachers and 95% of administrators agreed that LDC helped improve students' literacy performance.

- LDC coaches received almost unanimous positive feedback, with 95% of teachers reporting that their coaches gave them appropriate and timely feedback and support. A small number of participants submitted negative comments regarding coaches.

- Project liaisons were almost universally reported to be highly approachable, effective, and knowledgeable. Almost all teachers reported that their administrators encouraged LDC participation at the school, though only 47% of teachers reported receiving feedback from administrators about LDC and 58% reported never being observed while teaching an LDC task.

- Over two thirds of teachers felt they had sufficient time to meet during professional learning community (PLC) sessions and that administrators protected that time. However, the most frequently requested modification for future years was for more protected time during and outside of PLCs to plan modules, implement, and receive feedback about implementation. Most teachers reported meeting once every two weeks, which was about half the recommended frequency of PLC meetings.

- About two thirds of teachers expressed interest in learning more about how to lead LDC implementation at their schools. Over half of project liaisons and administrators expected their teachers to continue with LDC the following year. Both groups observed that teachers at the school who did not participate in the LDC PLC generally did not adopt LDC methods or materials on their own.

- While 77% of teachers agreed that their school had adequate technology to support LDC implementation, the second most common complaint by participants (19%) was the difficulty in successfully conducting Zoom meetings.

- With regard to creating modules, teachers were most likely to report success with selecting focus standards, creating the writing assignment, identifying skills, and providing multiple opportunities to engage students. They were less likely to report success with selecting texts, making connections to previous or future work, creating daily lessons, and planning a variety of assignments.

- With regard to implementing LDC in the classroom, teachers were most likely to report success with engaging students in productive struggle, differentiating instruction, and locating evidence of progress in student work. They were slightly less likely to report success in using evidence to modify plans, providing feedback, and systematically collecting information about student learning.

- When asked about LDC impact on students, teachers reported positive impact on writing quality, college and career readiness skills, overall literacy performance, reading skills, and content knowledge.

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 in Section 4.1 by presenting participation rates for key CoreTools activities, including creating a user account, viewing modules and mini-tasks, editing modules and mini-tasks, and commenting on modules and mini-tasks. In Section 4.2, we 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, and content area taught). In Section 4.3, 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.

4.1 CoreTools Activity Participation Rates

The four key CoreTools activities we examined are: creating a user account, viewing modules and mini-tasks, editing modules and mini-tasks, and commenting on modules and mini-tasks. Among the 188 CoreTools users, 154 identified were teachers, and 34 of them were administrators, with some individuals in each category acting as project liaisons. As seen in Table 4.1, nearly all participants used CoreTools to at least some degree. Ninety-one (91) percent of all participants created a user account, 84% of participants viewed modules or mini-tasks, 76% edited modules or mini-tasks, and 47% of them commented on modules or mini-tasks.

Table 4.1
CoreTools Feature Participation Rates: 2016-17

Participant Type	N of Participants	N and % of Participants with User Accounts	N and % of Participants who viewed a module or mini-task	N and % of Participants who edited a module or mini-task	N and % of Participants who commented on a module or mini-task
Teacher	139	127 (91%)	120 (86%)	107 (77%)	37 (27%)
Teacher/Project Liaison	15	14 (93%)	14 (93%)	14 (93%)	5 (33%)
Total Teachers	154	141 (92%)	134 (87%)	121 (79%)	42 (27%)
Project Liaison*	5	5 (100%)	5 (100%)	4 (80%)	2 (40%)
Administrator	27	23 (85%)	15 (56%)	16 (59%)	2 (7%)
Administrator/Project Liaison	2	2 (100%)	2 (100%)	1 (50%)	0 (0%)
Total Administrators*	34	30 (88%)	22 (65%)	21 (62%)	4 (12%)
Total Participants	188	171 (91%)	156 (84%)	142 (76%)	46 (24%)

*We categorize the coaches and coordinators who completed the Project Liaison survey as administrators.

In addition to displaying participation rates on key CoreTools activities for all i3 participants, Table 4.1 also displays subgroup results for participants playing different roles in the i3 implementation. These subgroups mirror the five groups to whom we administered surveys: teachers, project liaisons, administrators, teacher/project liaisons, and administrator/project liaisons. Teachers typically had higher participation rates than the administrators, as expected.

Over 90% of participants created a CoreTools user account. Significantly, even administrators who did not play a project liaison role created user accounts in high numbers. This suggests that the vast majority of administrators overseeing LDC PLCs had at least some familiarity with the online platform.

Likewise, large majorities of PLC teachers and project liaisons (between 87% and 100% depending on the participant role) viewed modules and/or mini-tasks in CoreTools. Administrators who did not play a project liaison role were considerably less likely to engage in this way, although a majority still viewed at least one module or mini-task.

We consider editing modules and mini-tasks to be the key indicator of deep engagement with the CoreTools module building platform. Nearly four out of every five participating teachers edited at least one module or mini-task. Administrators were less likely than teachers to edit materials in CoreTools; nevertheless, over half of administrators did so.

Overall, participants were much less likely to add comments to modules or mini-tasks (one quarter did so). This perhaps should not be surprising, as the i3 model set an expectation that coaches provide feedback to teachers via comments, but did not require teachers to comment back or reflect on peers' work.

4.2 Engagement with Key CoreTools Activities

In this section, we describe participants' level of engagement with three key CoreTools activities: viewing modules and mini-tasks, editing modules and mini-tasks, and commenting on modules and mini-tasks. 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, project liaison, and administrator), the level of the school at which the participant works (elementary, middle, or high), and in the case of teachers, the content area taught (elementary/multiple subjects, secondary ELA, secondary history/social studies, secondary science, and special education). As noted earlier, some participants played multiple roles in the intervention, so the teacher, project liaison, and administrators groups overlap to some degree as they do in our survey analysis. Descriptive statistics are only reported for groups with 4 or more members. As a result, we do not report on certain groups, such as math teachers. Finally, note that for each of the three analyses below, participants who did not engage in the activity are excluded from the analysis (i.e., the analyses do not include any observations with zero views, edits, or comments). As such, in each case, the results describe the behavior of participants who engaged in the particular activity at least once. The samples for the viewing, editing, and commenting analyses are 156, 142, and 46 respectively (see bottom row of Table 4.1)

Module/Mini-Task viewing. In Table 4.2, we present descriptive statistics on how many times i3 participants viewed modules and mini-tasks, both overall and by subgroup. We present the minimum number of views, the maximum number of views, the mean number of views, the standard deviation, and the sum total views across all participants. Overall the average participant viewed modules or mini-tasks about 30 times, while the range was from one view to 136 views. The standard deviation of 27.1 suggests that about two thirds of all participants viewed modules or mini-tasks between 3 and 57 times.

Table 4.2

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

Subgroup	N	Min	Max	Mean	Std. Deviation	Sum
All Participants	156	1	136	29.9	27.1	4661
Participant Role						
All Teachers	134	2	136	31.0	25.9	4147
All Project Liaisons	21	4	125	48.0	32.4	1008
All Administrators	17	1	82	11.5	20.0	195
School Level						
Elementary School Level Participants	88	1	136	33.5	30.0	2951
Middle School Level Participants	44	4	99	21.7	18.1	953
High School Level Participants	24	2	125	31.5	27.7	757
Content Area Taught						
Taught Elementary/Multiple Subjects	69	3	136	36.7	30.2	2535
Taught Secondary Science	13	5	62	28.5	18.5	370
Taught Secondary ELA	19	4	60	26.7	18.4	507
Taught Secondary Social Studies/History	19	7	99	26.2	23.3	497
Taught Special Education	9	2	38	15.4	12.3	139

As would be expected, project liaisons on average had the greatest number of views, while administrators viewed the least number of times. There was considerable variation in viewing behaviors across participant subgroups within these categories. Participants in middle schools viewed somewhat fewer modules and mini-tasks than their elementary and high school peers. Interestingly, at the secondary level, ELA, history/social studies, and science teachers all viewed similar numbers of modules and mini-tasks on average. Special education teachers seemed to view fewer modules or mini-tasks than their regular education peers.

Module/Mini-Task editing. On average, participants who engaged in editing modules or mini-tasks, did so 19 times over the course of the school year. There was a wide range of engagement from editing once to making 81 edits to modules and mini-tasks. Two thirds of participants edited between three and 35 times. Table 4.3 reports the descriptive results.

Table 4.3

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

Subgroup	N	Min	Max	Mean	Std. Deviation	Sum
All Participants	142	1	81	19.1	16.2	2712
Participant Role						
All Teachers	121	1	81	19.9	15.7	2405
All Project Liaisons	19	1	81	25.8	20.8	491
All Administrators	17	2	65	10.2	14.9	174
School Level						
Elementary School Level Participants	80	1	81	17.6	17.0	1407
Middle School Level Participants	39	1	47	17.7	12.5	689
High School Level Participants	23	1	63	26.8	17.0	616
Content Area Taught						
Taught Elementary/Multiple Subjects	62	1	81	19.1	17.3	1182
Taught Secondary Science	13	1	47	21.2	16.7	275
Taught Secondary ELA	17	1	52	24.5	15.0	417
Taught Secondary Social Studies/History	15	7	42	25.1	11.6	377
Taught Special Education	7	1	30	11.0	10.1	77

As with page viewing results, project liaisons edited the most and administrators edited the least. Participants at the high school level showed greater engagement in the editing process than their elementary and middle school peers, at least as measured by the number of edits. ELA and social studies teachers edited more documents than their elementary and science teacher peers, while special education teachers were less likely to make edits. Despite these differences, there was great variation across participants within each of the subgroups.

Module/Mini-Task commenting. Only 47 participants commented on modules or mini-tasks in the past school year. Within that highly engaged group, participants commented between one and 26 times, and on average four times. Most commenters were teachers, but those administrators who did comment on average did so more often than teachers or project liaisons. Similar to the results for editing, high school participants engaged to a greater degree

than elementary and middle school participants on average. Differences in means across content areas were small.

Table 4.4

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

Subgroup	N	Min	Max	Mean	Std. Deviation	Sum
All Participants	46	1	26	4.1	4.8	190
Participant Role						
All Teachers	42	1	16	3.7	3.6	157
All Project Liaisons	7	1	26	4.7	9.4	33
All Administrators	4	1	26	8.3	12.0	33
School Level						
Elementary School Level Participants	26	1	16	3.5	3.8	91
Middle School Level Participants	11	1	9	3.4	2.7	37
High School Level Participants	9	1	26	6.9	7.9	62
Content Area Taught						
Taught Elementary/Multiple Subjects	22	1	16	3.7	4.1	81
Taught Secondary Science	5	1	5	3.2	1.6	16
Taught Secondary ELA	7	1	12	4.1	4.0	29
Taught Secondary Social Studies/History	5	1	9	4.0	3.3	20

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 we were confident i3 participants created and/or adapted and taught in their classrooms. We took the presence of uploaded student work as evidence of teachers having taught the module in their classrooms. This parameter yielded a sample of 53 modules, associated with 50 teachers and 2 administrators. Figure 4.1 displays the mean number of CoreTools views, edits, and comments for the 50 teachers who completed and taught full-

length LDC modules and their 104 peers for whom we do not have evidence of full module implementation. As shown, teachers who completed and taught full-length LDC modules exhibited over twice as much viewing, editing, and commenting activity than their peers. The results suggest that participants who engage deeply with the module building platform are more likely to complete and teach LDC modules.
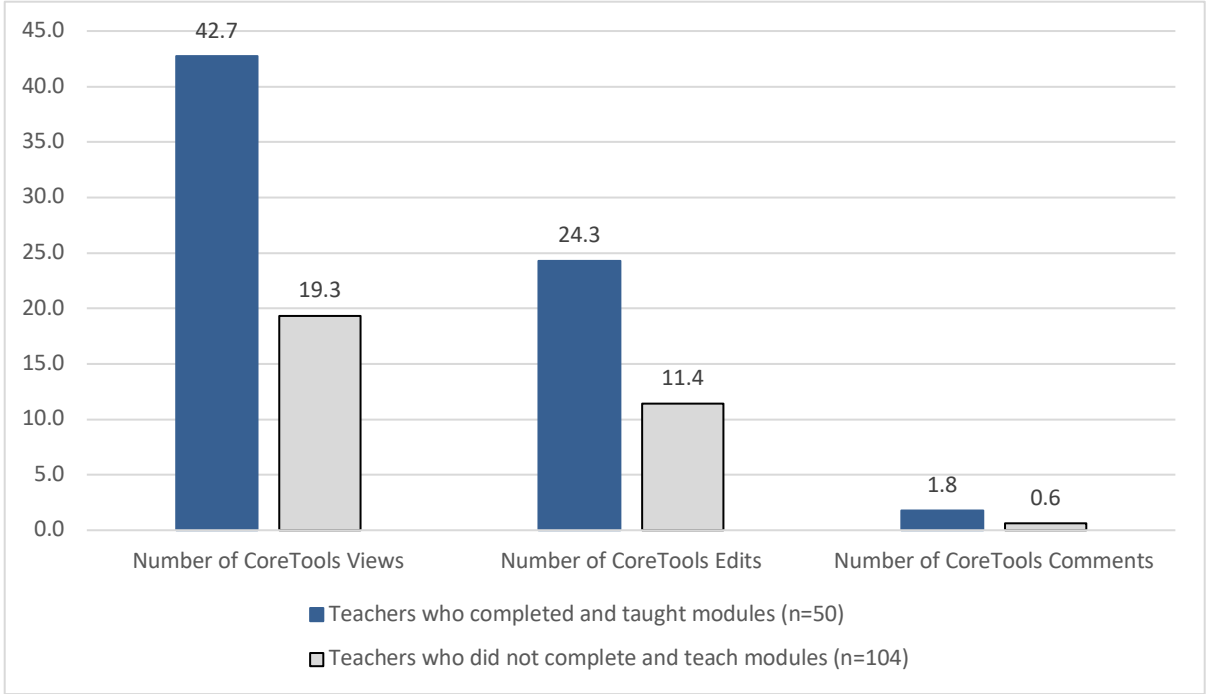

Figure 4.1. Mean number of CoreTools views, edits, and comments made by teachers who did and did not complete and teach modules

5.0 Module Artifact Analysis

Table 5.1 presents mean scores and standard deviations for all modules analyzed. Among the 53 modules we scored, 33 were at the elementary level, and 20 of them were at the secondary level. As previously stated, each module was rated using a five-point scale to measure 1) the effectiveness of the writing task or objective(s) for the module, 2) the module's alignment to the standards, 3) fidelity to the four stages of LDC instructional practice (i.e., preparation for the task, reading process, transition to writing, and writing process), 4) the quality of the instructional strategies, 5) coherence and clarity of the module, and 6) the overall quality of the module (see Appendix A for full descriptions of the dimensions).

Table 5.1

Module Means by Dimension and School Level

Dimension	Elementary		Secondary		All modules	
	n	*M (SD)*	*n*	*M (SD)*	*n*	*M (SD)*
1. Effective writing task	33	3.6 (1.2)	20	3.1 (1.1)	53	3.4 (1.2)
2. Standards alignment	33	3.1 (1.1)	20	2.9 (1.3)	53	3.0 (1.2)
3. Fidelity to LDC module instruction	33	3.6 (1.3)	20	2.2 (1.6)	53	3.0 (1.6)
4. Quality instructional strategies	33	3.1 (1.3)	20	1.9 (1.4)	53	2.6 (1.4)
5. Coherence and clarity of module	33	3.1 (1.3)	20	2.2 (1.5)	53	2.7 (1.4)
6. Overall impression	33	3.0 (1.2)	20	2.1 (1.5)	53	2.6 (1.4)

As can be seen, modules at the elementary level received higher mean ratings than did the modules at the secondary level. More specifically, mean ratings for the elementary modules ranged from 3.0 to 3.6, indicating that on average all dimensions were moderately present or realized. In contrast, only Dimensions 1 and 2, which focus on the effective writing task and standards alignment were in the three range for the secondary modules. In most cases, modules submitted for use at the middle and/or high school level received ratings of near two, indicating that the dimensions were not present or barely present or realized.

For the remainder of this report, we present results for the elementary and secondary modules separately. This will include further descriptive results, results from generalizability theory analyses, as well as factor analyses for the elementary modules. Because of the small sample size for the secondary modules, reported findings here will be limited to descriptive

results for the content area subgroups; generalizability and factor analyses for the secondary sample will be conducted at a later time once a larger sample of eligible modules has been collected.

5.1 Elementary Module Results

Table 5.2 presents descriptive results for the elementary modules by content area. A few comparative observations can be made. First, when looking across content areas, modules tended to receive the highest ratings for Dimension 1, concerning the effective writing task, and Dimension 3, which focused on fidelity to LDC module instruction. Second, the dimensions where modules received somewhat lower means varied depending upon the content area. More specifically, only science modules received a mean lower than three in regard to Dimensions 4 and 6, which focus on the quality of instructional strategies and the raters' overall impression of the module. In contrast, social studies teachers seemed to struggle with Dimension 2, concerning standards alignment. Ratings seem to indicate that teachers had issues with specifying appropriate focus standards for their modules.

Table 5.2

Descriptive Statistics for the Elementary Modules by Content Area

Dimension	ELA		Science		Social Studies	
	n	M (SD)	n	M (SD)	n	M (SD)
1. Effective writing task	13	3.5 (1.0)	14	3.4 (1.5)	5	4.0 (0.0)
2. Standards alignment	13	3.3 (1.0)	14	3.1 (1.2)	5	2.6 (1.3)
3. Fidelity to LDC module instruction	13	3.5 (1.5)	14	3.5 (1.5)	5	3.6 (0.9)
4. Quality instructional strategies	13	3.2 (1.5)	14	2.9 (1.2)	5	3.6 (0.9)
5. Coherence and clarity of module	13	3.2 (1.4)	14	3.1 (1.3)	5	3.4 (1.3)
6. Overall impression	13	3.1 (1.2)	14	2.9 (1.2)	5	3.4 (0.9)

Generalizability theory. As previously noted, two models were used to examine potential error in the scoring process. Table 5.3 and

Table 5.4 present results from the two-faceted and one-faceted models, which examine error across and within dimensions. As would be the goal of any rating session, most of the variation can be attributed either directly to the differences in the modules created by the teachers (66%) or to differing quality across the modules by dimension (28%). We were also encouraged to see that less than one percent of the variation was due to the raters either directly or across dimensions.

Table 5.3

Generalizability Study of the Elementary Module Ratings across Dimensions

Source of Error	Var.	%
Module ($\sigma2t$)	1.06	66.4
Rater ($\sigma2r$)	0.00	0.0
Dimension ($\sigma2d$)	0.06	3.8
Module * Dimension ($\sigma2td$)	0.45	27.8
Rater * Dimension ($\sigma2rd$)	0.00	0.1
Module * Rater ($\sigma2tr$)	-0.00	0.0
Error ($\sigma2trd,e$)	0.03	1.9

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

As previously mentioned, we also used a one-faceted design to further disentangle the very small amount of variance that we found due to the dimensions (4%). In this case, more than 99% of the variation in most of the dimensions could be attributed directly to the modules created by the teachers. The only exception involved Dimension 4, concerning the quality of instructional strategies, where 11% of the variance was due to an interaction between raters and modules. This indicates that anchor points and/or training for Dimension 4 might warrant revisions before the next year's rating sessions are conducted.

Table 5.4

Generalizability Studies of the Elementary Module Ratings for Each Dimension

	Module ($\sigma 2t$)		Rater ($\sigma 2r$)		Module * Rater ($\sigma 2tr$)		Error ($\sigma 2trd,e$)	
	Var.	%	Var.	%	Var.	%	Var.	%
1. Effective writing task	1.31	100.0	0.00	0.0	-0.01	0.0	0.00	0.0
2. Standards alignment	1.32	100.0	0.00	0.0	-0.01	0.0	0.00	0.0
3. Fidelity to LDC module instruction	1.71	99.6	-0.00	0.0	0.01	0.4	0.00	0.0
4. Quality instructional strategies	1.46	88.7	0.01	0.5	0.18	10.8	0.00	0.0
5. Coherence and clarity of module	1.84	99.8	0.00	0.0	-0.00	0.2	0.00	0.0
6. Overall impression	1.43	100.0	0.00	0.0	-0.00	0.0	0.00	0.0

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

Factor analysis. Table 5.5 presents the principal component solutions extracted from the teacher scores for each dimension across content areas. The result of the factor analysis is encouraging in that for the elementary sample, all six dimensions loaded on one factor and accounted for 74.56% of the variance in ratings across the 33 modules. This suggests a dominant factor or trait underlying the six dimensions used for this measure of LDC implementation.

Table 5.5
Principal Component Analysis of the Elementary Module Ratings

Dimension	Elementary (n = 33)
1. Effective writing task	.82
2. Standards alignment	.69
3. Fidelity to LDC module instruction	.87
4. Quality instructional strategies	.92
5. Coherence and clarity of module	.88
6. Overall impression	.97

5.2 Secondary Module Results

Table 5.6 presents descriptive results for the 19 secondary modules by content area. As the content area subgroups are quite small, please be cautious in interpreting the results in this section. Based on Table 4.6, modules tended to receive higher ratings for Dimensions 1 and 2, which focus on the writing task and the alignment to state content standards, with mean ratings above or approaching three. This indicates that these two dimensions were often moderately present or realized. Secondly, means were generally quite low for Dimensions 3 through 6, indicating that these traits were on average barely or not present at all. This seems to be in line with comments made by raters during debriefings, who noted that the potential of the module, as seen in "Section 1: What Task," was not always carried through the remainder of the module. Because of the sample size limitation, we did not run either the generalizability theory analyses or the factor analysis, as we did for the elementary sample.

Table 5.6
Descriptive Statistics for the Secondary Modules by Content Area

Dimension	ELA		Science		Social Studies	
	n	M (SD)	n	M (SD)	n	M (SD)
1. Effective writing task	5	3.0 (0.7)	5	3.4 (1.5)	9	2.8 (1.0)
2. Standards alignment	5	3.0 (1.6)	5	3.0 (1.4)	9	2.6 (1.0)
3. Fidelity to LDC module instruction	5	2.6 (2.1)	5	2.2 (2.2)	9	1.8 (1.1)
4. Quality instructional strategies	5	1.8 (1.6)	5	2.0 (2.0)	9	1.8 (1.1)
5. Coherence and clarity of module	5	1.6 (1.5)	5	2.2 (1.9)	9	2.3 (1.3)
6. Overall impression	5	1.8 (1.6)	5	2.0 (2.0)	9	2.1 (1.3)

5.3 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 set of rating sessions (e.g. Elementary, ELA, etc.). The following presents key findings concerning Dimension 1 through 5, as well as our expert raters' overall impressions.

Dimension 1: effective writing task. While this was often the highest scoring category, few teachers took full advantage of the opportunity to explain their writing task. Many teachers simply filled in mandatory sections of the teaching task, without providing the optional questions allowed at the beginning. Furthermore, many provided limited information or none at all in the optional student background section. Our expert raters felt strongly that this additional information was necessary to know what was expected of students and to determine what the expectations were for higher order thinking.

Dimension 2: standards alignment. Teachers were inconsistent in their specification of standards for the modules. First, some modules included standards primarily in the designated area in the "What Task" section of the module creator, other modules included them with the mini-tasks, and yet others included information on standards in more than one location. This inconsistency caused raters to spend more time trying to disentangle issues of alignment. It also should be noted that raters felt that teachers often lacked focus in specifying their standards, with some providing too many and others providing too few. In some cases, this was hypothesized to be an artifact of teachers adapting rather than completing original modules.

Dimension 3: fidelity to LDC module instruction. While ratings concerning fidelity to LDC module instruction varied greatly in quality, especially among the secondary modules, raters generally felt that teachers were more successful in the early rather than the later parts of the instruction. Students were given less instruction than considered necessary for the transition to writing and writing process skills. Furthermore, teachers used default mini-tasks that showed little adaptation or that did not align with the teaching task.

Dimension 4: quality instructional strategies. Feedback on the quality of instructional strategies tended to mimic what was discussed concerning Dimension 3. Raters believed that artifacts showed little or no evidence of how teachers were scaffolding critical thinking. Many of the modules used the same mini tasks, the writing task as specified often did not match the task template or the student work samples, and many modules felt like they were "cut and pasted" together.

Dimension 5: coherence and clarity of module. As one of our raters noted, coherence and clarity of the modules was "almost always either great or terrible." Raters noted a disconnect between the instructional strategies and what students produced. Furthermore, they considered it difficult to rate this dimension in cases where teachers provided little student work. In the end, though, modules that raters felt that they could take and implement directly in their own classrooms tended to receive the highest ratings for this dimension.

Dimension 6: overall impressions. Original modules were typically thought to be of much higher quality than those that were adapted. These modules were easier to understand, seemed to be more thought out, and had fewer mismatches across the task sections. Raters also felt that because they lacked understanding of what actually was changed or customized in the adapted modules, they had a limited ability to judge the quality of the work. Our expert teachers suggested that if more teachers had completed the student background and teacher reflection sections, and had included more student work samples, this would have greatly helped in the rating process. In addition, raters suggested that the addition of a section to provide details about the students, such as information about English language learners or prior achievement, would have been helpful in determining the appropriateness of the task template and mini tasks.

5.4 Summary of Results

While the overall sample and content area subsamples for the elementary module ratings were fairly small, and should therefore be interpreted with caution, some fairly clear trends emerged. First, teachers at the elementary level were moderately successful in the development of their modules as evidenced by the mean ratings for the dimensions that were primarily in the low- to mid-three range. This was generally true for the overall elementary sample, as well as the three content area subsamples. Second, results of the Generalizability study provided evidence that raters did a good job, with most variation due directly to differences in quality across the modules (66.44%) or to differing quality across the modules by dimension (27.78%). Likewise, Generalizability study results showed that almost all variation in ratings for the individual dimensions were due to differences in the modules (88.66% to 100.00%). The factor analysis provides further evidence that our scoring captured true variation in quality across modules. All six dimensions loaded on one factor, which accounted for 74.56% of the variance in ratings across the elementary modules.

In contrast, analyses for the secondary modules were limited because of having only 20 modules overall and less than 10 per content area subsample. Despite these limitations, it does appear that secondary teachers were most successful in regards to their specification of an effective writing task and the alignment to content standards, areas which generally received ratings in the three range. In contrast, these teachers were generally less successful regarding their LDC fidelity, instructional strategies, and coherence and clarity. These trends should still be considered tentative and will be examined further once we have a larger sample of secondary modules to analyze in the coming year.

6.0 Student Outcome Analysis

This section presents the student outcome analysis we conducted to evaluate LDC's impact on student learning in the 2016-17 school year. We begin by describing the process we used to define the LDC student sample and to construct a matching comparison sample. We then present descriptive statistics for the treatment and comparison groups. Finally, we report the estimated impact of LDC on students as measured by Smarter Balanced scores in English Language Arts (ELA).

6.1 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).

Elementary sample. The eligible LDC student sample for elementary includes all students who were enrolled for the entire 2016-17 school year under the instruction of at least one of the participating LDC teachers, and who had available data both for prior and current year achievement scores and demographic characteristics. Achievement and demographic data were used in the matching process.

The comparison sample was selected via a multi-stage process. In the first stage, we identified comparison schools for each of the participating LDC schools, based on similarity in both prior achievement and demographics. Then from within these comparison schools, we selected comparison students who were similar to each of the LDC students. We used the following variables to identify similar comparison schools: the percentage of students eligible for free or reduced price lunch, the percentage of African American students, mean prior student achievement in ELA, mean prior student achievement in math, the attendance rate of teachers, the percentage of teachers with three or fewer years of teaching experience, and the school grade span. At the student-level, we used coarsened exact matching (CEM) and matched students exactly on grade level as well as their Hispanic, Gifted, and English Language Learner (ELL) status. We also matched closely on variables for Black, Asian, other ethnicity, free or reduced priced lunch status, special education, and on prior individual student achievement and the mean prior achievement of students' core content class peers. Finally, students also were matched on the average attendance rate of their core content area

teachers and the percentage of their core content teachers[3] with three or fewer years of teaching experience, within five percentage points across the two samples.

The 2016-17 elementary sample prior to the CEM process included 13 schools, the 32 elementary teachers who consented to participate in the evaluation study, and their 794 students. After the student-level matching our final elementary LDC sample included 711 elementary students and retained the same number of teachers and schools (see Table 6.1).

Prior to matching, the potential elementary comparison sample consisted of 563 schools, 3,847 teachers, and 87,521 students. This comparison sample was substantially reduced during the first stage of matching, which identified the five schools that most closely resembled each of the 13 LDC elementary schools. After student-level CEM, a workable analytic comparison sample consisted of 42 schools, 168 teachers and 711 students (see Table 6.1).

Table 6.1

Before and After Matching Sample Sizes: Elementary School Analysis

	LDC sample			Comparison sample		
	School	Teacher	Student	School	Teacher	Student
Stage 1						
Before matching	13	32	794	563	3,847	87,521
After matching	13	32	794	65	469	8,174
Stage 2						
After matching	13	32	711	42	168	711

Middle school sample. The eligible LDC student sample for middle school was more challenging to identify than the elementary school sample because students were taught by multiple teachers of different subjects, each of whom did or did not participate in LDC. Our first step in sampling was to define at each school the potential sample of LDC students. These were all students at the school who enrolled in and completed two semesters of a standard ELA course. We began by classifying ELA courses as either standard core content ELA or supplemental ELA courses (for example, a second ELD class intended to support students'

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[3] In the vast majority of cases, each elementary student had only one teacher and so the prior experience variable and teaching experience variables reflected that one teacher.

success in the standard grade level course). Almost all of these students also were enrolled and completed core class content in social studies/history, and science in 2016-17. To be identified for the LDC sample, a student needed to have taught by at least one LDC teacher in ELA, social studies/history or science. In addition, to be part of the sample, prior and current achievement scores needed to be available for each student. The same two stage process used for selecting the elementary comparison sample was used for the middle school sampling.

The resulting LDC sample included six schools, 35 teachers, and 2,450 students prior to the CEM process. After the CEM student-level matching, our final secondary LDC sample was reduced to 2,200 students (see Table 6.2).

Table 6.2

Before and After Matching Sample Sizes: Middle School Analysis

	LDC sample			Comparison sample		
	Schools	Teachers	Students	Schools	Teachers	Students
Stage 1						
Before matching	6	35	2,450	178	6,597	91,981
After matching	6	35	2,450	30	1,995	19,499
Stage 2						
After matching	6	35	2,200	29	1,056	2,200

Prior to matching, the potential comparison sample consisted of 178 schools, 6,597 teachers and 91,981 students. This comparison sample was substantially reduced during the first stage of matching, which identified the five schools that most closely resembled each of the six LDC schools. After student-level CEM, a workable analytic comparison sample of 29 schools, 1,056 teachers, and 2,200 students was constructed (see Table 6.2).

6.2 Descriptive Results on the Matched Analytic Samples

Tables 6.3 and 6.4 present the student characteristics for the LDC student and comparison students, based on the final analytical samples for the elementary and secondary analyses respectively. Treatment and comparison samples matched very closely. Exact

matching was achieved on some variables, and all demographic variables were within 5 percentage points. We used the spring 2017 Smarter Balanced ELA tests as our outcome measures, and the spring 2016 Smarter Balanced ELA tests as one of the matching variables. For the prior 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 districts 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 elementary student sample after matching was comprised largely of Hispanic and Black students with more than two-thirds of them being of Hispanic ethnicity while slightly over one-quarter were Black (see Table 6.3). The sample was also mostly comprised of 4th and 5th grade students (95.4% combined), and of students with low socioeconomic status (88.5%). English language learners represented about one-quarter of this sample, while special education students represented slightly over one quarter of the sample, and less than 10% were classified as gifted students. Mean performance on the prior year academic assessment was very close to the district-wide performance levels in math and ELA.

As shown in Table 6.4 the final LDC secondary student sample included a large proportion of Hispanic students (87.5%), and a similarly large proportion of students with low socioeconomic backgrounds (88.5%). The secondary students were required to have received two full semesters of core ELA content, as is reflected in Table 6.4. We also captured student's exposure to supplemental ELA content and, on average, this was slightly less than one-half semester (0.4 supplemental units) per student. Core social studies and science content exposure was also typically two full semesters per student. The sample was mostly comprised of 6th (16.1%), 7th (41.1%), and 8th grade students (42.8%). English language learners represented slightly less than one-quarter of this sample, while there were about twice as many gifted students (16.5%) as compared to special education students (8.2%). In addition, mean performance on the prior year academic assessment was somewhat lower for LDC students as compared to district-wide performance levels in math and ELA.

Table 6.3

Student Characteristics of Elementary School Treatment and Comparison Groups After Coarsened Exact Matching, 2016-17 School Year

Student characteristic	LDC sample: Elementary (n = 711)	Comparison sample: Elementary (n = 711)
Race/Ethnicity		
Hispanic (%)	68.8	68.8
Black (%)	26.7	25.9
Asian (%)	2.5	2.8
White (%)	1.1	1.0
Other (%)	0.9	1.5
Female (%)	50.2	49.4
Special programs status		
Poverty (%)	88.5	90.4
English Language Learner (%)	26.2	26.2
Special education (%)	29.6	28.6
Gifted (%)	6.6	6.6
Student prior achievement		
Mean prior year math Z score	0.06	0.03
Mean prior year ELA Z score	0.05	0.04
Class & teacher characteristics		
Mean peer prior ELA Z score of current peers	0.05	0.05
Mean teacher attendance (%)	97.0	96.8
Percent teachers with <3 years of experience (%)	6.7	10.7
Grade level		
Grade 6 in 2016-17 (%)	41.5	41.5
Grade 7 in 2016-17 (%)	53.9	53.9
Grade 8 in 2016-17 (%)	4.6	4.6

Table 6.4

Student Characteristics of Middle School Treatment and Comparison Groups After Coarsened Exact Matching, 2016-17 School Year

Student characteristic	LDC sample: Secondary (n = 2,200)	Comparison sample: Secondary (n = 2,200)
Race/Ethnicity		
Hispanic (%)	87.5	85.4
Black (%)	5.5	5.5
Asian (%)	2.2	1.4
White (%)	4.0	5.2
Other (%)	0.8	2.5
Female (%)	51.1	49.2
Special programs status		
Poverty (%)	89.3	88.2
English Language Learner (%)	22.9	22.9
Special education (%)	8.2	9.1
Gifted (%)	16.5	12.5
Student prior achievement		
Mean prior year math Z score	-0.14	-0.14
Mean prior year ELA Z score	-0.13	-0.14
Class & teacher characteristics		
Mean peer prior ELA Z score of current peers	-0.10	-0.16
Mean teacher attendance (%)	95.9	96.5
Percent teachers with <3 years of experience (%)	5.9	8.2
Number of content units		
ELA core content units	2.0	2.0
ELA supplemental units	0.4	0.4
Social studies units	2.0	2.0
Science units	2.0	2.0
Grade level		
Grade 6 in 2016-17 (%)	16.1	16.1
Grade 7 in 2016-17 (%)	41.1	41.1
Grade 8 in 2016-17 (%)	42.8	42.8

6.3 Outcome Analysis Results: Elementary Sample

Because elementary students occasionally were taught by multiple teachers rather than a single one, we also employed a Multi-Membership Multiple Classification (MMMC) design for the elementary analysis. 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, which took into account some variation in elementary 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 considers any student exposed to any LDC intervention teacher via at least one subject as a treated individual. In this latter approach the treatment variable was dichotomous, coded as one for LDC treated students and zero for comparison students. The outcome variable for both models was students' Smarter Balanced scores in English language arts. For technical reasons of evaluating effect sizes, Smarter Balanced scale scores were standardized to the study sample.

Table 6.5

2016-17 LDC Elementary School Effect Estimates on Smarter Balanced ELA Performance Dosage Dependent Model

Variables	Model coefficient (S.E.)
Level 2 - LDC teacher treatment	-0.032 (0.071)
Level 1 - Student characteristics	
Hispanic	-0.075 (0.088)
Black	-0.203 (0.089)*
Other ethnicity	-0.032 (0.159)
Poverty	0.007 (0.051)
Female	0.129 (0.031)*
English Language Learner	-0.191 (0.046)*
Special education	-0.096 (0.056)
Gifted	0.200 (0.066)*
Grade 5	0.082 (0.054)
Grade 6	-0.089 (0.157)
Prior year math Z score	0.261 (0.027)*
Prior year ELA Z score	0.582 (0.026)*

Note. Most treated students were only exposed to one teacher (the LDC intervention teacher), thus the average treated student in this sample received a 0.91 treatment dosage. Because of this, we could estimate an average treatment on the treated (ATT) at 0.91 * −0.032 = −0.029. *Significant at p =.05

The dosage dependent effect of having an LDC teacher on elementary students' ELA performance in 2016-17 is shown in Table 6.5, and the dosage independent effect is shown in Table 6.6. Most treated students were only exposed to one teacher (the LDC intervention teacher); thus the average treated student in this sample received a 0.91 treatment dosage. Model results show no statistically discernible LDC effect on student outcomes. Similarly, the dosage independent model revealed no statistically significant effect for LDC. In other words, both analyses showed that 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 also were similar under both models and were in the expected directions. Prior ELA performance was the strongest predictor and prior math performance also helped explain the outcome. In addition to prior achievement, four demographic variables helped predict performance. English language learners performed at lower levels than English Only and Reclassified Fluent English Proficient

(RFEP) students, black students performed at lower levels on average than White and Asian students, females performed at significantly higher levels than males, and gifted students also performed at higher levels than their peers.

Table 6.6

2016-17 LDC Elementary School Effect Estimates on Smarter Balanced ELA Performance Dosage Independent Model

Variables	Model coefficient (S.E.)
Level 2 - LDC teacher treatment	-0.001 (0.066)
Level 1 - Student characteristics	
Hispanic	-0.075 (0.088)
Black	-0.203 (0.089)*
Other ethnicity	-0.032 (0.159)
Poverty	0.007 (0.051)
Female	0.129 (0.031)*
English Language Learner	-0.192 (0.046)*
Special education	-0.096 (0.056)
Gifted	0.200 (0.066)*
Grade 5	0.083 (0.054)
Grade 6	-0.096 (0.156)
Prior year math Z score	0.261 (0.027)*
Prior year ELA Z score	0.582 (0.026)*

Note. *Significant at $p = .05$

6.4 Outcome Analysis Results: Middle School Sample

Similar analyses were conducted at the middle school level, where the norm was student exposure to multiple teachers. As discussed in detail in Chapter 2, students could be exposed to anywhere between 0 and 6 different LDC teachers. Using a Multiple Membership Multiple Classification (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).

As with the elementary sample, we present results of models that are both dosage dependent and dosage independent. The dosage dependent effect of being exposed to LDC teachers in ELA, social studies, and science on middle school students' ELA performance in

2016-17 is shown in Table 6.7, and the dosage independent effect of having at least one LDC teacher is shown in Table 6.8. Model results show no statistically discernible LDC effect on student outcomes for either model. In other words, both analyses showed that students taught by LDC teachers scored similarly on the ELA test to their matched peers in the comparison group. It should be noted that while we initially included the number of supplemental ELA courses that middle school students completed as a covariate, results for this variable were not significant and so were not included in the final middle school models.

The effects of the covariates on student performance were also similar to those in the elementary school model. Prior ELA and math performance as well as ELL status, Black ethnicity, and gender were significant predictors of ELA performance. In secondary schools, Hispanic ethnicity and the average prior achievement of a student's peers were also significant predictors of ELA performance in the expected directions.

Table 6.7

2016-17 LDC Middle School Effect Estimates on Smarter Balanced ELA Performance Dosage Dependent Model

Variables	Model coefficient (S.E.)
LDC teacher treatment	0.103 (0.102)
Student characteristics	
Hispanic	-0.204 (0.041) *
Black	-0.194 (0.052) *
Other ethnicity	-0.015 (0.077)
Poverty	0.003 (0.029)
Female	0.153 (0.017) *
English Language Learner	-0.147 (0.028) *
Special education	-0.062 (0.034)
Gifted	0.055 (0.029)
Grade 7	0.076 (0.049)
Grade 8	0.016 (0.052)
Mean teacher attendance rate	0.028 (0.007) *
Percent teachers with <3 years of experience	0.161 (0.099)
Mean peer prior ELA Z score	0.153 (0.022) *
Prior year math Z score	0.263 (0.015) *
Prior year ELA Z score	0.551 (0.016) *

Note. Since the average treatment student received a 0.446 treatment dosage we could estimate an average treatment on the treated (ATET) at 0.446 * 0.103 = 0.046. This effect was not statistically significant.
*Significant at $p = 0.05$

Table 6.8

2016-17 LDC Middle School Effect Estimates on Smarter Balanced ELA Performance Dosage Independent Model

Variables	Model coefficient (S.E.)
LDC teacher treatment	0.033 (0.060)
Student characteristics	
Hispanic	-0.204 (0.041) *
Black	-0.195 (0.052) *
Other ethnicity	0.018 (0.076)
Poverty	0.003 (0.029)
Female	0.153 (0.016) *
English Language Learner	-0.149 (0.028) *
Special education	-0.062 (0.034)
Gifted	0.052 (0.029)
Grade 7	0.075 (0.049)
Grade 8	0.016 (0.052)
Mean teacher attendance rate	0.028 (0.007) *
Percent teachers with <3 years of experience	0.163 (0.099)
Mean peer prior ELA Z score	0.152 (0.022) *
Prior year math Z score	0.263 (0.015) *
Prior year ELA Z score	0.551 (0.016) *

Note. *Significant at $p = 0.05$

6.5 Summary of Results

Quasi-experimental design analysis of the impact of LDC on 2016-17 student test scores in elementary and secondary schools produced two measures of impact effect at each school level. One impact effect measure took into account the dosage of LDC exposure while the other reflected any exposure to an LDC teacher and was thus dosage independent. Our results for 2016-17 did not reveal any statistically significant intervention effects. This finding should not be surprising given the early stage of intervention, with teachers having only completed one year of implementation.

7.0 Summary of Findings

This annual report presents an initial look at LDC implementation in the first cohort of 20 schools in a large West Coast district during their first year of implementation. We summarize these results organized by the three categories of evaluation questions we listed in Chapter 1 of this report.

7.1 Program Characteristics and Implementation

All participant groups in this district were generally positive about LDC characteristics and implementation at their sites. Questions about program quality and impact received positive responses from a majority of respondents. A quarter of survey respondents took the time to specify in open-ended responses that they found all LDC supports helpful.

Teachers valued the collaborative nature of the initiative, as evidenced by their participation in regular PLC meetings and informal discussions. A large majority of teachers credited LDC with making them more likely to collaborate with other teachers, not only in their grade levels and content areas but outside of them as well. In addition to peer feedback, teachers valued coach feedback greatly. Positive ratings of LDC coaches were nearly universal.

Online course material was revised sufficiently following pilot teachers' feedback that it became a strength of the program this year. Most teachers rated the online courses as highly useful, helpful, and relevant, though a small majority did not find them easy to use.

There were 154 teachers over multiple content areas across all grade levels, and some of these teachers did not feel well supported by the available resources, particularly in science and math. These teachers did less well on instructional module quality, engaged with the CoreTools module building platform to a lesser degree, and a few of them detailed their criticisms about the fit between their teaching contexts and the program's offerings in open-ended responses.

Module quality suffered when teachers simply adapted existing modules without making significant changes or providing insight about their reasoning for instructional decisions. Although the module building platform provides optional areas where teachers provide such reasoning and reflection after the fact, most teachers did not utilize these areas. In addition, few teachers provided student work. Without either student work or teacher reflection, it was difficult for raters to evaluate whether or not instructional goals were met. Teachers who

implemented modules and provided evidence of the implementation engaged more deeply with the LDC platform.

7.2 Contextual Factors and Implementation

The people who supported teachers in the LDC implementation – project liaisons, administrators, LDC coaches, and LDC staff – received extremely positive responses for helpfulness, timeliness, and level of knowledge. Questions about the quality of support that participants received often had universal or nearly universal agreement. The effectiveness of the people involved was the most notable facilitating factor in implementation.

Time was one of the primary hindering factors in implementation. Although most teachers reported that they thought they had sufficient time for their LDC PLCs to meet, they did not all meet with the recommended frequency or duration. On the other hand, a small majority of teachers reported in open-ended responses that time was problematic. The open-ended responses revealed that teachers needed different types of support when it comes to time. Some teachers needed their administrators to protect that time. Others requested more time to write, implement, and reflect. Some teachers want a different use of the time, whether it is to get more support with the online resources, to observe others in the classroom, or to meet with a specific grade level or content area team rather than as a large group.

Related to time was the problem of technology. This issue had two points. First, the logistics of Zoom meetings were difficult at some sites. This was perceived as a frustrating waste of time. These open-ended responses stood in contrast to the finding that most teachers thought their school's technology was adequate for LDC implementation. This indicates that although the Zoom meetings worked for the majority of participants, failed meetings resulted in highly negative perceptions for those affected. The second problem with technology was that some teachers needed far less time and support to understand CoreTools and other teachers need far more. In general, however, the complexity of CoreTools and the need to use multiple sites like The Teaching Channel was a significant barrier for those teachers who were affected. Thus, the most effective use of limited teacher and coach time during PLC meetings were constrained by the different technology needs of the sites and of the participating teachers.

The issue of differentiation among teachers touches on many factors in addition to technology, such as content area as described above, and as the initiative progresses, the level of experience and knowledge about the LDC model. As the pool of teachers both deepens

and widens, the ability of the program to differentiate will likely affect participants' experience to a great extent.

7.3 Program Impacts

Based on survey results, LDC was perceived to have positive impacts on both teacher practice and student learning. Administrators were particularly enthusiastic, with a large majority believing that LDC helped students in multiple facets of literacy and skills acquisition. Teachers were slightly more cautious but still positive.

Teacher self-reports of change in their own ability over the year indicated that they felt they had improved most in areas related to instructional planning, which aligned with the primary content of LDC sessions. Slightly fewer teachers reported positive change in areas involving collecting and using student data to inform instruction, which again corresponded to the fewer number of teachers who implemented modules.

Module analysis showed strengths in creating an effective writing task and fidelity to LDC module instruction. Science modules scored less well on quality of instructional strategies and overall impression of the rater. History/social studies scored less well on standards alignment.

Our preliminary analysis of the 2016-17 student data did not reveal any statistically significant intervention effects. This finding should not be surprising given the early stage of intervention, with teachers having only completed one year of implementation while LDC implementation is a two-year process.

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Appendix A: LDC Module Rating Dimensions

Each module was rated on six dimensions. All of these were rated using a five-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.

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.

2

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.

3

4 **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.

4

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.

5

<table>
<tr><td>Dimension
6</td><td>## Overall Impression</td></tr>
</table>

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 B: 2016-2017 Teacher Survey and Responses

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 (2016-17), how many classes did you teach?

☐ classes   N = 52, Mean = 5.17, Range: 0-8

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

☐ classes   N = 52, Mean = 2.90, 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 (2016-17), did you have any experience with LDC?

(N = 122)

☐ Yes   10 teachers (8.2%)

☐ No   ⬇ Skip to T5a   112 teachers (91.8%)

T4. How many of the following did you teach prior to the current school year (2016-17)?

☐ LDC modules   N = 10, Mean = 1.8, Range: 0-6

☐ LDC mini-tasks, outside of modules   N = 10, Mean = 2.2, Range: 0-6

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 = 110)

☐ Yes → Skip to T6 104 teachers (94.5%)

☐ No 6 teachers (5.4%)

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

(N = 6)

☐ Yes → Skip to 5d 6 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 = 6)

☐ CoreTools online platform to access existing modules or mini-tasks 4 teachers (66.7%)

☐ CoreTools online platform to design modules or mini-tasks 4 teachers (66.7%)

☐ LDC online courses 1 teachers (14.3%)

☐ Modules or mini-tasks given to me by other teachers in my school 1 teachers (14.3%)

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

[Survey ends here for respondents answering question T5d]

T6. About how often did your LDC PLC meet?

(N = 116)

☐	Less than once a month	0 teachers (0%)
☐	Once a month	28 teachers (24.1%)
☐	Every other week	53 teachers (45.7%)
☐	Once a week	Skip to T8 — 29 teachers (25%)
☐	Twice a week or more often	Skip to T8 — 6 teachers (5.2%)

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

(N = 81)

☐	PLC time was not protected.	22 teachers (27.2%)
☐	PLC members had limited interest in attending meetings.	13 teachers (16%)
☐	School administrator did not make it a priority.	10 teachers (12.3%)
☐	Project liaison did not provide sufficient organizational support.	3 teachers (3.7%)
☐	Not enough teachers participated.	7 teachers (8.6%)
☐	PLC members had other priorities that compete with LDC participation.	48 teachers (59.3%)
☐	Other (please specify) _____	28 teachers (34.6%)

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

(N = 116)

☐	Less than once a month	21 teachers (18.1%)
☐	Once a month	20 teachers (17.2%)
☐	Every other week	37 teachers (31.9%)
☐	Once a week	27 teachers (23.3%)
☐	Twice a week or more	11 teachers (9.5%)

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

(N = 116)

☐	Less than 45 minutes	6 teachers (5.2%)
☐	45 to 59 minutes	84 teachers (72.4%)
☐	60 to 74 minutes	25 teachers (21.6%)
☐	75 minutes or more	1 teachers (0.9%)

3 LDC Training and Support

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

	Not effective	A little effective	Moderately effective	Very effective
Demonstrating the usefulness of LDC for teachers (N = 116)	4 (3.4%)	26 (22.4%)	60 (51.7%)	26 (22.4%)
Creating an environment in which teachers were comfortable working together (N = 116)	3 (2.6%)	17 (14.7%)	47 (40.5%)	49 (42.2%)
Fostering an environment where teachers shared their instructional plans with colleagues (N = 116)	4 (3.4%)	26 (22.4%)	42 (36.2%)	44 (37.9%)
Allowing space for shared problem solving (N = 116)	4 (3.4%)	31 (26.7%)	41 (35.3%)	40 (34.5%)
Helping teachers learn to develop modules (N = 116)	6 (5.2%)	31 (26.7%)	50 (43.1%)	29 (25.0%)

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 = 116)	10 (8.6%)	30 (25.9%)	56 (48.3%)	20 (17.2%)
Relevance of information presented (N = 116)	9 (7.8%)	28 (24.1%)	55 (47.4%)	24 (20.7%)
Ease of use (N = 116)	18 (15.5%)	43 (37.1%)	44 (37.9%)	11 (9.5%)
Usefulness of resource documents (e.g., LDC Pitfall Checklist, CCSS Mental Markers, etc.) (N = 116)	19 (16.4%)	32 (27.6%)	51 (44.0%)	14 (12.1%)
Usefulness of videos (N = 116)	20 (17.2%)	36 (31%)	46 (39.7%)	14 (12.1%)
Degree to which course material helped me to create and/or adapt LDC modules (N = 116)	13 (11.2%)	44 (37.9%)	45 (38.8%)	14 (12.1%)
Opportunity to extend learning when needed or desired (N = 116)	16 (13.8%)	32 (27.6%)	50 (43.1%)	18 (15.5%)

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 = 116)

☐ Yes   105 teachers (90.5%)

☐ No   11 teachers (9.5%)

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

(N = 116)

☐ Yes   101 teachers (87.1%)

☐ No   15 teachers (12.9%)

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 = 116)	24 (20.7%)	9 (7.8%)	11 (9.5%)	41 (35.3%)	31 (26.7%)
One-on-one Zoom video conference and/or call with your LDC coach (N = 115)	25 (21.7%)	9 (7.8%)	12 (10.4%)	27 (23.5%)	42 (36.5%)
Coach-facilitated discussions on the Teaching Channel Teams platform (N = 116)	40 (34.5%)	7 (6.0%)	19 (16.4%)	28 (24.1%)	22 (19.0%)
Email or phone communication with your LDC coach (N = 116)	37 (31.9%)	7 (6.0%)	13 (11.2%)	29 (25.0%)	30 (25.9%)
Other (please specify) (N = 27) _____	20 (74.1%)	1 (3.7%)	2 (7.4%)	2 (7.4%)	2 (7.4%)

4	**Module Creation**

T14. During the current school year (2016-17), 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 =104, Mean = 1.60, Range: 0-12

T15. During the current school year (2016-17), 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 = 104, Mean = 1.14, Range: 0-4

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

(N = 122)

☐ Modules were created by individual teachers.   44 teachers (35.8%)

☐ Modules were created by teams of two or more teachers.   62 teachers (50.4%)

☐ Modules were created by the PLC as a whole.   28 teachers (22.8%)

☐ Other (please specify)   12 teachers (9.8%)
_____

T17. Please indicate to what extent you were able to do each of the following when creating LDC modules and/or mini-tasks.

	Not at all	A little bit	A moderate extent	A great extent
Select a set of focus standards for a writing assignment (N = 116)	4 (3.4%)	10 (8.6%)	47 (40.5%)	55 (47.4%)
Create a standards-driven writing assignment task (N = 116)	5 (4.3%)	15 (12.9%)	52 (44.8%)	44 (37.9%)
Select high quality, complex texts and other materials that allowed students to engage in deeper learning (N = 116)	6 (5.2%)	25 (21.6%)	56 (48.3%)	29 (25.0%)
Create a writing assignment that provided multiple opportunities for students to engage with the material (N = 116)	10 (8.6%)	17 (14.7%)	53 (45.7%)	36 (31.0%)
Identify the skills students need to develop in order to complete a writing assignment (N = 116)	7 (6.0%)	18 (15.5%)	60 (51.7%)	31 (26.7%)
Create daily lessons to teach the skills a student needs to complete a writing assignment (N = 116)	10 (8.6%)	31 (26.7%)	51 (44.0%)	24 (20.7%)
Plan for a variety of methods to assess student progress (e.g., mini-task scoring guides) (N = 116)	10 (8.6%)	35 (30.2%)	54 (46.6%)	17 (14.7%)
Make connections to previous or future learning that make a writing assignment relevant for students (N = 116)	10 (8.6%)	27 (23.3%)	53 (45.7%)	26 (22.4%)

5 Classroom Implementation

T18. How many total LDC modules did you teach during the current school year (2016-17)?

☐ Modules   N = 116, Mean = 1.67, Range: 0-6

T19. Outside of modules, approximately how many individual LDC mini-tasks did you teach during the current school year (2016-17)?

☐ Mini-tasks   N = 116, Mean = 2.59, Range: 0-20

T20. Please indicate to what extent you were able to do each of the following activities when teaching LDC modules and/or mini-tasks.

	Not at all	A little bit	A moderate extent	A great extent
Engage students in productive struggle through challenging texts, discussion questions, and other instructional supports (N = 116)	7 (6.0%)	19 (16.4%)	59 (50.9%)	31 (26.7%)
Provide support for students to complete the assignment by differentiating instruction (N = 116)	8 (6.9%)	19 (16.4%)	60 (51.7%)	29 (25.0%)
Systematically collect information about student progress (N = 116)	11 (9.5%)	30 (25.9%)	49 (42.2%)	26 (22.4%)
Provide feedback to students using shared expectations for learning (e.g., a mini-task scoring guide) (N = 116)	11 (9.5%)	26 (22.4%)	51 (44.0%)	28 (24.1%)
Locate evidence of performance of standards in student work (N = 116)	8 (6.9%)	25 (21.6%)	55 (47.4%)	28 (24.1%)
Use evidence of student performance of standards to modify instructional plans (N = 116)	9 (7.8%)	27 (23.3%)	54 (46.6%)	26 (22.4%)

T21. Did you teach a One-Text One-Week module?

(N = 116)

☐ Yes   46 teachers (39.7%)

☐ No   ⬇ Skip to T24   70 teachers (60.3%)

T22. What was the name of the One-Text One-Week module?

_____

T23. Which of these statements best describes how you created the One-Text One-Week module?

(N = 46)

☐ I created a module from a template in CoreTools.   28 teachers (60.9%)

☐ I copied and adapted another teacher's module from the LDC Library in CoreTools.   18 teachers (39.1%)

T24. What module did you work on most heavily during the current school year (2016-17)? This module is typically one you worked on *after* the One-Text One-Week module.

_____

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

(N = 116)

☐ I created a module from a template in CoreTools.   55 teachers (47.4%)

☐ I copied and adapted another teacher's module from the LDC Library in CoreTools.   61 teachers (52.6%)

T26. Did you teach this module in your classroom?

(N = 116)

☐ Yes, I have already taught this module this year.   79 teachers (68.1%)

☐ No, but I plan to teach this module before the end of the 2016-17 school year.   17 teachers (14.7%)

☐ No, but I plan to teach this module during next school year.   16 teachers (13.8%)

☐ No. I do not currently have plans to teach this module in my classroom.   4 teachers (3.4%)

T27. How many modules did you submit online for LDC National Peer Review during the current school year (2016-17)?

▢ Modules   If none, ⬇ skip to T29 N = 116, Mean = 0.70, Range: 0-4

T28. How helpful did you find the National Peer Review process in improving the quality of your module?

(N = 54)

▢ Not helpful	12 teachers (22.2%)
▢ A little helpful	19 teachers (35.2%)
▢ Moderately helpful	19 teachers (35.2%)
▢ Very helpful	4 teachers (7.4%)

7 Impact on Teacher Practice and Learning

T29. Between the beginning and end of this year's work with LDC, please indicate how much your ability in the following areas has improved:

	Not at all	A little	Moderately	A great deal
Selecting a set of focus standards for a writing assignment (N = 116)	10 (8.6%)	18 (15.5%)	59 (50.9%)	29 (25%)
Creating standards-driven writing tasks of sufficient quality and scope to allow students to think deeply about disciplinary content and practice literacy skills (N = 116)	9 (7.8%)	25 (21.6%)	56 (48.3%)	26 (22.4%)
Identifying the skills students need to develop in order to complete a writing assignment (N = 116)	10 (8.6%)	17 (14.7%)	63 (54.3%)	26 (22.4%)
Creating daily lessons to teach each skill a student needs to complete a writing assignment (N = 116)	13 (11.2%)	32 (27.6%)	52(44.8%)	19 (16.4%)
Assessing students' progress as they work toward completing a writing assignment (N = 116)	13 (11.2%)	26 (22.4%)	57 (49.1%)	20 (17.2%)
Tracking and analyzing evidence about student progress in a systematic way (N = 116)	12 (10.3%)	33 (28.4%)	54 (46.6%)	17 (14.7%)
Identifying patterns of student understandings or misconceptions (N = 116)	11 (9.5%)	36 (31%)	53 (45.7%)	16 (13.8%)
Using evidence of student performance of standards to shape future instructional decisions (N = 116)	12 (10.3%)	27 (23.3%)	54 (46.6%)	23 (19.8%)

T30. 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 = 116)	10 (8.6%)	17 (14.7%)	72 (62.1%)	17 (14.7%)
Using LDC modules became an important part of my instructional practice. (N = 116)	13 (11.2%)	35 (30.2%)	56 (48.3%)	12 (10.3%)
Implementing LDC helped me incorporate my state's College- and Career-Ready Standards into my instruction. (N = 116)	10 (8.6%)	27 (23.3%)	66 (56.9%)	13 (11.2%)
LDC helped me incorporate writing assignments into my existing curriculum. (N = 116)	10 (8.6%)	16 (13.8%)	73 (62.9%)	17 (14.7%)
I am more likely to collaborate with other teachers on designing instruction after participating in our LDC Professional Learning Community. (N = 116)	11 (9.5%)	16 (13.8%)	69 (59.5%)	20 (17.2%)
Participating in LDC helped me develop working relationships with teachers in different grades and/or subjects. (N = 116)	9 (7.8%)	27 (23.3%)	63 (54.3%)	17 (14.7%)
I often incorporated LDC mini-tasks into my non-LDC instruction. (N = 116)	14 (12.1%)	46 (39.7%)	43 (37.1%)	13 (11.2%)

8 | Impact on Student Learning

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

	Strongly disagree	Disagree	Agree	Strongly agree
LDC helped students develop reading skills. (N = 104)	10 (9.6%)	23 (22.1%)	62 (59.6%)	9 (8.7%)
LDC was effective in improving students' content knowledge. (N = 104)	11 (10.6%)	16 (15.4%)	67 (64.4%)	10 (9.6%)
LDC modules effectively supported students in completing writing assignments. (N = 104)	8 (7.7%)	15 (14.4%)	67 (64.4%)	14 (13.5%)
LDC was effective in improving the quality of students' writing. (N = 104)	9 (8.7%)	20 (19.2%)	62 (59.6%)	13 (12.5%)
LDC supported students' development of skills needed for college and career readiness. (N = 104)	8 (7.7%)	15 (14.4%)	69 (66.3%)	12 (11.5%)
LDC increased students' capacity to analyze and understand the components of a writing assignment task. (N = 104)	9 (8.7%)	15 (14.4%)	68 (65.4%)	12 (11.5%)
LDC helped students develop speaking and listening skills. (N = 104)	10 (9.6%)	17 (16.3%)	62 (59.6%)	15 (14.4%)
Overall, LDC helped improve students' literacy performance (N = 104)	9 (8.7%)	15 (14.4%)	66 (63.5%)	14 (13.5%)

9   Project Liaison Support

The following question refers to the LDC project liaison in your school. This is the teacher or administrator leading your Professional Learning Community work.

T32. Please indicate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Disagree	Agree	Strongly agree
Our school's LDC project liaison effectively supported our Professional Learning Community meetings. (N = 104)	4 (3.8%)	13 (12.5%)	48 (46.2%)	39 (37.5%)
When I had questions about LDC, I felt comfortable approaching our school's project liaison. (N = 104)	4 (3.8%)	6 (5.8%)	51 (49%)	43 (41.3%)
Our project liaison had a strong grasp of LDC. (N = 104)	4 (3.8%)	12 (11.5%)	58 (55.8%)	30 (28.8%)
Our project liaison helped teachers align LDC to broader school instructional goals. (N = 104)	4 (3.8%)	18 (17.3%)	52 (50.0%)	30 (28.8%)
Our project liaison offered useful feedback for the design and revision of LDC modules. (N = 104)	4 (3.8%)	20 (19.2%)	47 (45.2%)	33 (31.7%)
Our project liaison was effective in inviting teachers to join the LDC initiative. (N = 104)	5 (4.8%)	18 (17.3%)	49 (47.1%)	32 (30.8%)

10 School Administrator Support

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

T33. What proportion of PLC meetings focused on LDC did your school administrator attend?

(N = 116)

☐	Less than one quarter of LDC PLCs	32 teachers (27.6%)
☐	About one quarter of LDC PLCs	11 teachers (9.5%)
☐	About one half of LDC PLCs	20 teachers (17.2%)
☐	About three quarters of LDC PLCs	12 teachers (10.3%)
☐	More than three quarters of LDC PLCs	41 teachers (35.3%)

T34. How many times did your school administrator observe you teach an LDC mini-task during the current school year (2016-17)?

(N = 116)

☐	0 times	67 teachers (57.8%)
☐	1 time	29 teachers (25.0%)
☐	2 times	11 teachers (9.5%)
☐	3 or more times	9 teachers (7.8%)

T35. 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 = 115)	9 (7.8%)	23 (20%)	70 (60.9%)	13 (11.3%)
protected common planning time for our LDC Professional Learning Community to meet. (N = 115)	9 (7.8%)	15 (13.0%)	59 (51.3%)	32 (27.8%)
encouraged teachers to participate in LDC. (N = 115)	4 (3.5%)	3 (2.6%)	75 (65.2%)	33 (28.7%)
expressed concerns that implementing LDC is taking time away from other instructional priorities. (N = 115)	20 (17.4%)	48 (41.7%)	36 (31.3%)	11 (9.6%)
communicated how using LDC's tools supported specific school initiatives and/or goals. (N = 115)	7 (6.1%)	22 (19.1%)	66 (57.4%)	20 (17.4%)
provided me with feedback about my LDC planning and/or instruction. (N = 115)	13 (11.3%)	48 (41.7%)	46 (40.0%)	8 (7.0%)
made formative assessment a priority at my school. (N = 115)	8 (7%)	28 (24.3%)	63 (54.8%)	16 (13.9%)

11   Teacher Leadership Role

T36. 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 = 103)	8 (7.8%)	40 (38.8%)	41 (39.8%)	14 (13.6%)
I was involved in discussions about how to expand LDC implementation at my school in future years. (N = 103)	11 (10.7%)	43 (41.7%)	40 (38.8%)	9 (8.7%)
I had the opportunity to work with our LDC project liaison and our administrator to help shape LDC implementation. (N = 103)	7 (6.8%)	40 (38.8%)	47 (45.6%)	9 (8.7%)
LDC helped me create writing assignments to use within my current curriculum. (N = 103)	7 (6.8%)	16 (15.5%)	64 (62.1%)	16 (15.5%)
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 = 103)	12 (11.7%)	30 (29.1%)	48 (46.6%)	13 (12.6%)

12   Facilitators and Barriers

T37. 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 = 115)	9 (7.8%)	25 (21.8%)	65 (56.5%)	16 (13.9%)
I felt adequately prepared to effectively implement LDC modules in my classroom. (N = 115)	7 (6.1%)	39 (33.9%)	59 (51.3%)	10 (8.7%)
It was challenging to find content-rich reading materials for the LDC modules I developed. (N = 115)	7 (6.1%)	49 (42.6%)	46 (40.0%)	13 (11.3%)
My school had adequate technology to support teachers' use of LDC. (N = 115)	9 (7.8%)	17 (14.8%)	62 (53.9%)	27 (23.5%)
It was easy to find and adapt LDC mini-tasks for use in my classroom. (N = 115)	9 (7.8%)	31 (27.0%)	63 (54.8%)	12 (10.4%)

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*
  - o *Zoom meetings, written feedback on teacher work in LDC CoreTools, Teaching Channel discussions, emails, etc.*
- *In-person coaching*
  - o *Summer training, in-person support visits from LDC and District Lead, in-person professional development opportunities, etc.*

T38. What supports did you find the most useful and why?

T39. What supports were not helpful and why?

T40. In what ways could LDC implementation be improved in your school in the future?

Appendix C: 2016-2017 Project Liaison Survey and Responses

1   LDC Participation

PL1. Prior to the current school year (2016-17), did you have any experience with LDC?

(N = 18)

☐ Yes   2 liaisons (11.1%)

☐ No   ⬇ Skip to PL3   16 liaisons (88.9%)

PL2. How many of the following did you teach prior to the current school year (2016-17)?

☐ LDC modules   N = 2, Mean = 2, Range: 2-2

☐ LDC mini-tasks, outside of modules   N = 2, Mean = 0, Range: 0-0

2   Professional Learning Community and Teacher Collaboration

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

PL3. About how often did your LDC PLC meet?

(N = 18)

☐ Less than once a month   1 liaisons (5.6%)

☐ Once a month   2 liaisons (11.1%)

☐ Every other week   8 liaisons (44.4%)

☐ Once a week   ⬇ Skip to PL5   6 liaisons (33.3%)

☐ Twice a week or more often   ⬇ Skip to PL5   1 liaisons (5.6%)

PL4. What were the primary barriers preventing your LDC PLC from meeting weekly? Select all that apply.

(N = 18)

☐ PLC time was not protected.	6 liaisons (33.3%)
☐ PLC members had limited interest in attending meetings.	2 liaisons (11.1%)
☐ School administrator did not make it a priority.	3 liaisons (16.7%)
☐ I was unable to provide sufficient organizational support.	1 liaisons (5.6%)
☐ Not enough teachers participated.	1 liaisons (5.6%)
☐ PLC members had other priorities that competed with LDC participation.	7 liaisons (38.9%)
☐ Other (please specify) _____	1 liaisons (5.6%)

PL5. About how often did you have informal discussions (as opposed to scheduled meetings) about LDC with teachers in your LDC PLC?

(N = 18)

☐ Less than once a month	3 liaisons (16.7%)
☐ Once a month	2 liaisons (11.1%)
☐ Every other week	8 liaisons (44.4%)
☐ Once a week	4 liaisons (22.2%)
☐ Twice a week or more	1 liaisons (5.6%)

PL6. On average how long did your school's LDC PLC meetings typically last?

(N = 18)

☐ Less than 45 minutes	2 liaisons (11.1%)
☐ 45 to 59 minutes	15 liaisons (83.3%)
☐ 60 to 74 minutes	1 liaisons (5.6%)
☐ 75 minutes or more	0 liaisons (0%)

PL7. How effective was your LDC PLC in the following areas?

	Not effective	A little effective	Moderately effective	Very effective
Demonstrating the usefulness of LDC for teachers (N = 18)	1 (5.6%)	4 (22.2%)	8 (44.4%)	5 (27.8%)
Creating an environment in which teachers are comfortable working together (N = 18)	1 (5.6%)	4 (22.2%)	6 (33.3%)	7 (38.9%)
Fostering an environment where teachers share their instructional plans with colleagues (N = 18)	1 (5.6%)	4 (22.2%)	4 (22.2%)	9 (50.0%)
Allowing space for shared problem solving (N = 18)	2 (11.1%)	3 (16.7%)	5 (27.8%)	8 (44.4%)
Helping teachers learn to develop modules (N = 18)	2 (11.1%)	2 (11.1%)	5 (27.8%)	9 (50.0%)

PL8. 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 = 18)	0 (0%)	3 (16.7%)	11 (61.1%)	4 (22.2%)
Relevance of information presented (N = 18)	1 (5.6%)	2 (11.1%)	10 (55.6%)	5 (27.8%)
Ease of use (N = 18)	1 (5.6%)	3 (16.7%)	11 (61.1%)	3 (16.7%)
Usefulness of resource documents (e.g., LDC Pitfall Checklist, CCSS Mental Markers, etc.) (N = 18)	0 (0%)	4 (22.2%)	8 (44.4%)	6 (33.3%)
Usefulness of videos (N = 18)	1 (5.6%)	6 (33.3%)	7 (38.9%)	4 (22.2%)
Degree to which course material helped teachers to create and/or adapt LDC modules (N = 18)	0 (12%)	6 (33.3%)	7 (38.9%)	5 (27.8%)
Opportunity to extend learning when needed or desired (N = 18)	1 (5.6%)	3 (16.7%)	5 (27.8%)	9 (50.0%)

PL9a. 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 = 18)

☐ Yes   18 liaisons (100%)

☐ No   0 liaisons (0%)

PL9b. Did your LDC coach provide written feedback on your module(s) in LDC CoreTools in a timely manner?

(N = 18)

☐ Yes   17 liaisons (94.4%)

☐ No   1 liaisons (5.6%)

PL10. 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 = 18)	4 (22.2%)	0 (0%)	2 (11.1%)	3 (16.7%)	9 (50.0%)
One-on-one Zoom video conference and/or call with your LDC coach (N = 18)	1 (5.6%)	1 (5.6%)	1 (5.6%)	2 (11.1%)	13 (72.2%)
Coach-facilitated discussions on the Teaching Channel Teams platform (N = 18)	9 (50.0%)	1 (5.6%)	2 (11.1%)	1 (5.6%)	5 (27.8%)
Email or phone communication with your LDC coach (N = 18)	1 (5.6%)	0 (0%)	3 (16.7%)	1 (5.6%)	13 (72.2%)
Other (please specify) (N = 2) Solo video conference (n=1), Texting (n=1)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)

PL11. How many in-person and/or online LDC professional development offerings for school administrators and project liaisons did you attend during the current school year (e.g., Launch Day [in person], spring Project Liaison Meeting [in person], Bi-Monthly Community Meetings [online], Bi-Monthly Coach Meetings [online])?

　　　Professional development offerings   N = 17, Mean = 3.41, Range: 0-20

PL12. 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 = 18)	0 (0%)	0 (0%)	5 (27.8%)	13 (72.2%)	0 (0%)
LDC provided adequate technical support for issues with the CoreTools online platform. (N = 18)	0 (0%)	1 (5.6%)	7 (38.9%)	9 (50.0%)	1 (5.6%)
LDC offered sufficient professional development opportunities for me to lead the initiative in my school. (N = 18)	1 (5.6%)	2 (11.1%)	4 (22.2%)	10 (55.6%)	1 (5.6%)
LDC coaches were able to connect me with additional resources when needed. (N = 18)	1 (5.6%)	1 (5.6%)	6 (33.3%)	10 (55.6%)	0 (0%)
It was challenging to coordinate with our LDC coach on how to structure Professional Learning Community time. (N = 18)	3 (16.7%)	8 (44.4%)	2 (11.1%)	4 (22.2%)	1 (5.6%)
When I reached out to our LDC coach, he or she responded quickly. (N = 18)	0 (0%)	0 (0%)	3 (16.7%)	14 (77.8%)	1 (5.6%)
Our LDC coach was easy to work with. (N = 18)	0 (0%)	1 (5.6%)	1 (5.6%)	15 (83.3%)	1 (5.6%)
Our LDC coach was knowledgeable and provided high quality guidance. (N = 18)	0 (0%)	0 (0%)	5 (27.8%)	12 (66.7%)	1 (5.6%)

4 Module Creation

PL13. During the current school year (2016-17), 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 = 17, Mean = 1.35, Range: 0-2

PL14. During the current school year (2016-17), 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 = 18, Mean = 1.89, Range: 0-11

PL15. How did members of your PLC collaborate to create LDC modules? Check all that apply.

(N = 18)

☐ Modules were created by individual teachers.   5 liaisons (27.8%)

☐ Modules were created by teams of two or more teachers.   7 liaisons (38.9%)

☐ Modules were created by the PLC as a whole.   4 liaisons (22.2%)

☐ Other (please specify)   3 liaisons (16.7%)
_____

PL16. Please indicate to what extent you were able to do each of the following when creating LDC modules and/or mini-tasks.

	Not at all	A little bit	To a moderate extent	To a great extent
Select a set of focus standards for a writing assignment. (N = 18)	0 (0%)	0 (0%)	8 (44.4%)	10 (55.6%)
Create a standards-driven writing assignment task. (N = 18)	0 (0%)	0 (0%)	10 (55.6%)	8 (44.4%)
Select high quality, complex texts and other materials that allowed students to engage in deeper learning. (N = 18)	0 (0%)	3 (16.7%)	8 (44.4%)	7 (38.9%)
Create a writing assignment that provided multiple opportunities for students to engage with the material. (N =18)	0 (0%)	1 (5.6%)	8 (44.4%)	9 (50.0%)
Identify the skills students need to develop in order to complete a writing assignment. (N = 18)	0 (0%)	2 (11.1%)	10 (55.6%)	6 (33.3%)
Create daily lessons to teach the skills a student needs to complete a writing assignment. (N = 18)	0 (0%)	3 (16.7%)	9 (50.0%)	6 (33.3%)
Plan for a variety of methods to assess student progress (e.g. mini-task scoring guides). (N = 18)	2 (11.1%)	5 (27.8%)	7 (38.9%)	4 (22.2%)
Make connections to previous or future learning that make a writing assignment relevant for students. (N = 18)	0 (0%)	4 (22.2%)	7 (38.9%)	7 (38.9%)

5 | School Administrator Support

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

PL17. What proportion of PLC meetings focused on LDC did your school administrator attend?

(N = 16)

☐	Less than one quarter of LDC PLCs	6 liaisons (37.5%)
☐	About one quarter of LDC PLCs	4 liaisons (25.0%)
☐	About one half of LDC PLCs	1 liaisons (6.3%)
☐	About three quarters of LDC PLCs	2 liaisons (12.5%)
☐	More than three quarters of LDC PLCs	3 liaisons (18.8%)

PL18. 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 = 16)	0 (0%)	3 (18.8%)	13 (81.3%)	0 (0%)
protected common planning time for our LDC Professional Learning Community to meet. (N = 16)	0 (0%)	5 (31.3%)	6 (37.5%)	5 (31.3%)
encouraged teachers to participate in LDC. (N = 16)	0 (0%)	0 (0%)	12 (75%)	4 (25.0%)
expressed concerns that implementing LDC was taking time away from other instructional priorities. (N = 16)	5 (31.3%)	4 (25.0%)	5 (31.3%)	2 (12.5%)
communicated how using LDC's tools supported specific school initiatives and/or goals. (N = 16)	0 (0%)	6 (37.5%)	7 (43.8%)	3 (18.8%)
provided me with feedback about my LDC planning and/or instruction. (N = 16)	1 (6.3%)	9 (56.3%)	5 (31.3%)	1 (6.3%)
made formative assessment a priority at my school. (N = 16)	1 (6.3%)	4 (25.0%)	9 (56.3%)	2 (12.5%)

6 Project Liaison Leadership Role

PL19. 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 = 16)	0 (0%)	9 (56.3%)	5 (31.3%)	2 (12.5%)
I was involved in discussions about differentiating LDC implementation to meet teacher learning needs. (N = 16)	0 (0%)	5 (31.3%)	6 (37.5%)	5 (31.3%)
I was involved in discussions about how to expand LDC implementation at my school in future years. (N = 16)	0 (0%)	7 (43.8%)	4 (25.0%)	5 (31.3%)
My role as a LDC project liaison allowed me to effectively advocate for additional resources on my campus. (N = 16)	0 (0%)	7 (43.8%)	4 (25.0%)	5 (31.3%)
I was involved in setting instructional goals for the LDC work at my school. (N = 16)	0 (0%)	5 (31.3%)	5 (31.3%)	6 (37.5%)
I met regularly with my LDC coach to manage the LDC work plan. (N = 16)	0 (0%)	2 (12.5%)	10 (62.5%)	4 (25.0%)
I feel that my position as an LDC project liaison allowed me to build my capacity as an instructional leader among my colleagues. (N = 16)	0 (0%)	4 (25.0%)	4 (25.0%)	8 (50.0%)

7 Alignment

PL20. 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 school wide goals. (N = 18)	0 (0%)	8 (44.4%)	6 (33.3%)	4 (22.2%)
LDC helped teachers create writing assignments to use within their current curricula. (N = 18)	0 (0%)	4 (22.2%)	11 (61.1%)	3 (16.7%)
LDC complemented other initiatives taking place in my school. (N = 18)	1 (5.6%)	2 (11.1%)	11 (61.1%)	4 (22.2%)
LDC was a strategy for implementing my state's College- and Career-Ready Standards. (N = 18)	0 (0%)	3 (16.7%)	12 (66.7%)	3 (16.7%)
The time spent implementing LDC interfered with other important initiatives at my school. (N = 18)	3 (16.7%)	6 (33.3%)	7 (38.9%)	2 (11.1%)
LDC helped prepare students in my school for current state assessments. (N = 18)	0 (0%)	5 (27.8%)	10 (55.6%)	3 (16.7%)
It was difficult for teachers to focus on LDC because of other competing priorities at the school. (N = 18)	1 (5.6%)	4 (22.2%)	5 (27.8%)	8 (44.4%)

8   Scale-up and Sustainability

PL21. 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 = 18)	1 (5.6%)	4 (22.2%)	12 (66.7%)	1 (5.6%)
Teachers at my school who were not part of the LDC PLC meetings used the LDC planning process and/or LDC CoreTools. (N = 18)	6 (33.3%)	7 (38.9%)	5 (27.8%)	0 (0%)
As a result of LDC, new collaborations across grades and/or subjects were created or are being launched at my school. (N = 18)	3 (16.7%)	9 (50.0%)	6 (33.3%)	0 (0%)
Teachers and administrators at my school are committed to sustaining the LDC initiative. (N = 18)	1 (5.6%)	4 (22.2%)	11 (61.1%)	2 (11.1%)
I expect our LDC PLC to increase in size next year. (N = 18)	1 (5.6%)	5 (27.8%)	9 (50.0%)	3 (16.7%)

9 District Support

PL22. 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 = 18)	0 (0%)	0 (0%)	6 (33.3%)	9 (50.0%)	3 (16.7%)
District leaders had a firm understanding of LDC. (N = 18)	0 (0%)	1 (5.6%)	6 (33.3%)	6 (33.3%)	5 (27.8%)
District leaders are interested in spreading the use of LDC to additional schools. (N = 18)	0 (0%)	1 (5.6%)	6 (33.3%)	7 (38.9%)	4 (22.2%)
District professional development efforts were aligned with the LDC initiative. (N = 18)	0 (0%)	2 (11.1%)	6 (33.3%)	4 (22.2%)	6 (33.3%)
District leaders visited my school to discuss the implementation of LDC. (N = 18)	1 (5.6%)	1 (5.6%)	8 (44.4%)	5 (27.8%)	3 (16.7%)

10   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, Teaching Channel discussions, emails, etc.*
- *In-person coaching*
  - *Summer training, in-person support visits from LDC and District Lead, in-person professional development opportunities, etc.*

PL23. What supports did you find the most useful and why?

PL24. What supports were not helpful and why?

PL25. In what ways could LDC implementation be improved in your school in the future?

Appendix D: 2016-2017 Administrator Survey and Responses

1   LDC Participation

A1. What is your role at the school?

(N = 21)

☐ Principal   14 admins (66.7%)

☐ Assistant Principal   7 admins (33.3%)

☐ Other (please specify)   0 admins (0%)
_____

2   Professional Learning Community

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

(N = 20)

☐ Less than one quarter of LDC PLCs   7 admins (35%)

☐ About one quarter of LDC PLCs   3 admins (15%)

☐ About one half of LDC PLCs   4 admins (20%)

☐ About three quarters of LDC PLCs   2 admins (10%)

☐ More than three quarters of LDC PLCs   4 admins (20%)

A3. How many in-person and/or online LDC professional development offerings for school administrators and project liaisons did you attend during the current school year (e.g., Launch Day [in person], February Administrator Meeting [in person], Bi-Monthly Community Meetings [online])?

☐ LDC Professional development offerings   N = 20, Mean = 1.85, Range: 0-5

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 = 20)	1 (5.0%)	0 (0%)	7 (35.0%)	12 (60.0%)	0 (0%)
My school has adequate technology to access LDC online resources. (N = 20)	2 (10.0%)	0 (0%)	10 (50.0%)	8 (40.0%)	0 (0%)
LDC offered sufficient professional development opportunities for LDC project liaisons. (N = 20)	1 (5.0%)	1 (5.0%)	11 (55.0%)	5 (25.0%)	2 (10.0%)
LDC offered sufficient professional development opportunities for school administrators. (N = 20)	1 (5.0%)	3 (15.0%)	13 (65.0%)	2 (10.0%)	1 (5.0%)
LDC staff members were able to connect me with additional resources when needed. (N = 20)	1 (5.0%)	0 (0%)	12 (60.0%)	5 (25.0%)	2 (10.0%)

4 Classroom Observation

A5. How many times during the current school year did you observe <u>teachers</u> implementing an LDC module?

(N = 20)

☐ 0 times	Skip to A7	1 admins (5.0%)
☐ 1-2 times		8 admins (40.0%)
☐ 3-5 times		9 admins (45.0%)
☐ 6 or moretimes		2 admins (10.0%)

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

(N = 19)

☐ Not effective	0 admins (0%)
☐ A little effective	3 admins (15.8%)
☐ Moderately effective	12 admins (63.2%)
☐ Very effective	4 admins (21.1%)

5   Impact on Teacher Practice

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 = 20)	0 (0%)	3 (15.0%)	9 (45.0%)	8 (40.0%)
Creating standards-driven writing tasks of sufficient quality and scope to allow students to think deeply about disciplinary content and practice literacy skills (N = 20)	0 (0%)	3 (15.0%)	10 (50.0%)	7 (35.0%)
Identifying the skills students need to develop in order to complete a writing assignment (N = 20)	0 (0%)	3 (15.0%)	10 (50.0%)	7 (35.0%)
Creating daily lessons to teach each skill a student needs to complete a writing assignment (N = 20)	0 (0%)	6 (30.0%)	10 (50.0%)	4 (20.0%)
Assessing students' progress as they work toward completing a writing assignment (N = 20)	0 (0%)	6 (30.0%)	10 (50.0%)	4 (20.0%)
Tracking and analyzing evidence about student progress in a systematic way (N = 20)	0 (0%)	6 (30.0%)	10 (50.0%)	4 (20.0%)
Identifying patterns of student understandings or misconceptions (N = 20)	2 (10%)	4 (20.0%)	13 (65.0%)	1 (5.0%)
Using evidence of student performance of standards to shape future instructional decisions (N = 20)	0 (0%)	5 (25.0%)	10 (50.0%)	5 (25.0%)

6   Impact on Student Learning

A8. Please indicate the degree to which you agree or disagree with the statements below:

	Strongly disagree	Disagree	Agree	Strongly agree
LDC helped students develop reading skills. (N = 20)	0 (0%)	4 (20.0%)	13 (65.0%)	3 (15.0%)
LDC was effective in improving students' content knowledge. (N = 20)	0 (0%)	3 (15.0%)	14 (70.0%)	3 (15.0%)
LDC modules effectively supported students in completing writing assignments. (N = 20)	0 (0%)	1 (5.0%)	13 (65.0%)	6 (30.0%)
LDC was effective in improving the quality of students' writing. (N = 20)	0 (0%)	2 (10.0%)	14 (70.0%)	4 (20.0%)
LDC supported students' development of skills needed for college and career readiness. (N = 20)	0 (0%)	1 (5.0%)	13 (65.0%)	6 (30.0%)
LDC increased students' capacity to analyze and understand the components of a writing assignment task. (N = 20)	0 (0%)	3 (15.0%)	13 (65.0%)	4 (20.0%)
LDC helped students develop speaking and listening skills. (N = 20)	0 (0%)	4 (20.0%)	13 (65.0%)	3 (15.0%)
Overall, LDC helped improve students' literacy performance. (N = 20)	0 (0%)	1 (5.0%)	13 (65.0%)	6 (30.0%)

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 = 20)	0 (0%)	4 (20.0%)	12 (60.0%)	4 (20.0%)
I met regularly with the LDC project liaison in my school to stay abreast of implementation progress. (N = 18)	0 (0%)	5 (27.8%)	11 (61.1%)	2 (11.1%)
I was involved in discussions about differentiating LDC implementation to meet teacher learning needs. (N = 20)	0 (0%)	6 (30.0%)	12 (60.0%)	2 (10.0%)
I led discussions about how to expand my school's LDC implementation in future years. (N =20)	1 (5.0%)	7 (35.0%)	10 (50.0%)	2 (10.0%)
I made changes to school schedules to accommodate LDC professional learning time. (N = 20)	0 (0%)	3 (15.0%)	12 (60.0%)	5 (25.0%)

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 school wide goals. (N = 20)	0 (0%)	7 (35.0%)	10 (50.0%)	3 (15.0%)
LDC helped teachers create writing assignments to use within their current curricula. (N = 20)	0 (0%)	3 (15.0%)	10 (50.0%)	7 (35.0%)
LDC complemented other initiatives taking place in my school. (N = 20)	0 (0%)	4 (20.0%)	9 (45.0%)	7 (35.0%)
LDC was a strategy for implementing my state's College- and Career-Ready Standards. (N = 20)	0 (0%)	3 (15.0%)	13 (65.0%)	4 (20.0%)
The time spent implementing LDC interfered with other important initiatives at my school. (N = 20)	6 (30.0%)	7 (35.0%)	7 (35.0%)	0 (0%)
LDC helped prepare students in my school for current state assessments. (N = 20)	0 (0%)	7 (35.0%)	12 (60.0%)	1 (5.0%)
It was difficult for teachers to focus on LDC because of other competing priorities at the school. (N = 20)	1 (5.0%)	5 (25.0%)	12 (60.0%)	2 (10.0%)

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 = 20)	0 (0%)	5 (25.0%)	7 (35.0%)	7 (35.0%)	1 (5.0%)
Teachers at my school who were not part of the LDC PLC meetings used the LDC planning process and/or LDC CoreTools. (N = 20)	4 (20.0%)	12 (60.0%)	3 (15.0%)	0 (0%)	1 (5.0%)
As a result of LDC, new collaborations across grades and/or subjects were created or are being launched at my school. (N = 20)	2 (10.0%)	10 (50.0%)	5 (25.0%)	3 (15.0%)	0 (0%)
Teachers and administrators at my school are committed to sustaining the LDC initiative. (N = 20)	1 (5.0%)	3 (15.0%)	8 (40.0%)	6 (30.0%)	2 (10.0%)
I expect our LDC PLC to increase in size next year. (N = 20)	1 (5.0%)	6 (30.0%)	6 (30.0%)	5 (25.0%)	2 (10.0%)

10 District Support

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 = 20)	0 (0%)	4 (20.0%)	9 (45.0%)	4 (20.0%)	3 (15.0%)
District leaders had a firm understanding of LDC. (N = 20)	0 (0%)	7 (35.0%)	4 (20.0%)	3 (15.0%)	6 (30.0%)
District leaders are interested in spreading the use of LDC to additional schools. (N = 20)	0 (0%)	3 (15.0%)	6 (30.0%)	3 (15.0%)	8 (40.0%)
District professional development efforts were aligned with the LDC initiative. (N = 20)	0 (0%)	7 (35.0%)	4 (20.0%)	5 (25.0%)	4 (20.0%)
District leaders visited my school to discuss the implementation of LDC. (N = 20)	2 (10.0%)	5 (25.0%)	7 (35.0%)	4 (20.0%)	2 (10.0%)

11   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, Teaching Channel discussions, emails, etc.*
- *In-person coaching*
  - *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?

A14. What supports were not helpful and why?

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

Appendix F: 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, the fixed effects included a school cohort indicator, a teacher effect for years of experience, as well as an aggregate indicator measuring prior 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, socio-economic 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 in future years. 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 et al. (2014, equation 3).

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

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

$$u_{School(i)}^{(3)} \sim N(0, \sigma_{u(2)}^2), \qquad u_j^{(2)} \sim N(0, \sigma_{u(2)}^2), \qquad e_i \sim N(0, \sigma_e^2)$$

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 $u_{School(i)}^{(3)}$ represents the random effects for that level of classification. Within the term $\sum_{j \in Teacher(i)} w_{i,j} u_j^{(2)}$, $u_j^{(2)}$ is the set of j random effects for the teachers included in the selected data set, 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.

$$
\begin{aligned}
achievement_i = {} & \beta_0 + LDC_i * \beta_1 + priorELA_i * \beta_2 + priorMath_i * \beta_3 + Female_i * \beta_4 + LEP_i \\
& * \beta_5 + SES_i * \beta_6 + Black_i * \beta_7 + Hispanic_i * \beta_8 + SPED_i * \beta_9 + Grade7_i * \beta_{10} \\
& + Grade8_i * \beta_{11} + Gifted_i * \beta_{12} + priorClassELA_i * \beta_{13} + TeachExp_i * \beta_{14} \\
& + TeachAbs_i * \beta_{15} + u_{School(i)}^{(3)} \sum_{j \in Teacher(i)} w_{i,j} u_j^{(2)} + e_i
\end{aligned}
$$

$$u_{School(i)}^{(3)} \sim N(0, \sigma_{u(3)}^2), \qquad u_j^{(2)} \sim N(0, \sigma_{u(2)}^2), \qquad e_i \sim N(0, \sigma_e^2)$$

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;

$Grade7_i$, and $Grade8_i$ are dummy coded 1 when the grade was attended and otherwise as 0, allowing grade 6 students to serve as the reference group. In the models that combine elementary and middle school students the additional dummy coded grade variables will be included. The elementary school specification would be very similar, with different dummy variables for grades;

$priorELA_i$, and $priorMath_i$ are standardized student achievement scores from the prior year;

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

$TeachExp_i$ is the aggregated mean of the years of teaching experience for those teachers which student i was exposed to in her core classes;

$TeachAbs_i$ is the aggregated mean of the number of days absent for those teachers which student i was exposed to in her core classes;

β_1 is the impact of LDC, the treatment;

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

$\beta_2 \& \beta_3$ are the effects of the prior score covariates;

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

$\beta_{12} \dots \beta_{15}$ 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 mean 0 and variance, $\sigma^2_{u(2)}, \sigma^2_{u(3)}, \sigma^2_e$ respectively.

Table A.F.1

Elementary School Student/Teacher Weighting Based on Course Mark Links

Content Area	Course Mark	Weighting
ELA	Listening Reading Speaking Writing Listening - ELD Reading - ELD Speaking - ELD Writing – ELD	These eight course mark linkages are weighted proportionally so that they sum to equal 1/9 in any given grading period and 1/3 across a full year.
Social studies	Hist Soc Sci	This course mark linkage is weighted proportionally to sum to equal 1/9 in any given grading period and 1/3 across a full year.
Science	Science	This course mark linkage is weighted proportionally to sum to equal 1/9 in any given grading period and 1/3 across a full year.
Other	Health Ed Physical Ed Mathematics Arts	These course mark linkages are not included in the student/teacher weighting procedure

Table A.F.2

Middle School Student/Teacher Weighting Based on Course Mark Links

Content area	Possible courses	Example student/teacher weighting for use in MMMC	Example LDC treatment dosage
Core ELA	ENGLISH –Regular and Honors 6A,6B,7A,7B,8A,8b	Student takes two units Core ELA with an intervention Teacher: English 6A & 6B Weight=2/8=0.25	Weight=0.25
Supplemental ELA	ELD, ADV ELD, Literature & Language, Literature Success	Student takes two supplemental units ELA with and an LDC teacher: Lit Success 1A &1B Weight=2/8=0.25	Weight=0.25
Social studies	WHG ANC CIV, WHG MED/MOD, US HIST G&C A & B (Regular and Honors) Also HUMANIT A&B	Student takes two units of social studies with a non-intervention teacher: WHG ANC CIV A & B Weight=2/8=0.25	Weight=0.0
Science	SCI/HLTH 6A &6B HEALTH JH SCIENCE 7 SCIENCE 8A & 8B (Regular and Honors)	Student takes two units social studies with a non-intervention teacher: SCI/HLTH 6A & 6B Weight=2/8=0.25	Weight=0.0
Other	All other Courses	Not included in analysis	Not included in analysis
Total		Unity: for every student the student/teacher weights sum to 1	Treatment Weight=0.50

Note. The acronyms used by the district are used in the lists of possible courses.

Calculation of Effect Size

We calculated student-level effect sizes according to the 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 defined above, 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 (mean=0, standard deviation=1). As a result, we expected 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 control 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 was 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)
Center for the Study of Evaluation (CSE)

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