THE
PAST FOUNDATION

Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (LDC)

Final Report
Year 2 Evaluation 2017-18
Pre/Post Cohort 2 Comparative Survey

KNOWLEDGE CAPTURE PROGRAM

PAST Foundation

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Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (LDC)

EVALUATION REPORT 2017-18, Year 2

The Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (Rural LDC Project) is a project funded by the Ohio Department of Education, Straight A Fund. The project is designed for implementation in five rural districts that comprise the Rural Collaborative consortia schools, including Northwestern Local Schools, Mapleton Local Schools, Hillsdale Local School District, Loudonville-Perrysville Exempted Village Schools, and Black River Local Schools.

The PAST Foundation Knowledge Capture Program (KC) is evaluating project implementation and project outcomes. This report presents evaluation conducted during 2017-18 and is focused on analysis of the pre/post survey data for Cohort 2 Teachers (C2) LDC Program Implementation. *Appendix A* of this report presents the Rural LDC Cohort 2 Comparative Survey Report, and *Appendix B* presents Pre-Implementation and Post-Implementation Survey question sets. *Appendix C* presents the Pre/Post List of Comparative Questions. Finally, *Appendix D* and *Appendix E* present the Pre-Implementation Aggregated Data Survey Report submitted October 20, 2017 and the Post-Implementation Aggregated Data Survey Report submitted March 30, 2018.

The Evaluation Team held (2) meetings during the 2017-18 academic year. One in the fall (9/27/17), and a second meeting in spring (2/26/18) to review C2 pre/post surveys. The Rural Collaborative Cohort 2 Teacher pre-implementation survey was administered on two dates to coincide with pre-implementation training: May 17, 2017 (n=10), and September 1, 2017 (n=8). The post-implementation survey (n=18) was administered during spring 2018 during an LDC professional development session on Wednesday, March 7, 2018 following implementation of LDC Module 1 and 2.

Evaluation of Implementation Year 2 Outcomes (2017-18)

Second year data shows progress with particular goals for C2 teachers, with aspects of LDC skills presenting a positive shift toward meeting implementation goals.
Teachers self-reported using the following instructional methods based on classroom practices prior to 2017-18 academic reflected in the Pre-Implementation Survey (2017) in comparison with the Post-Implementation Survey (2018). The following list shows areas where teachers self-reported a shift in classroom practices:

- *Indepth Explanation Writing (Pre-Q14/Post-Q6)*:
  - Pre-implementation data shows that just over half (56%) of the (18) teachers assigned in-depth writing *1-2 times/semester* in comparison with post-data showing 82% assigning in-depth writing, *an increase of 26%*. Two teachers reported assigning writing at least weekly in the post-implementation survey.
- *Defending Writing with Evidence (Pre-Q18/Post-Q10)*:
  - All (17) teachers reported shifting to *1-2 times/semester or monthly* in March 2018 in comparison to (12) teachers reporting in the pre-Implementation survey.
- *Open*-Ended Problems *(Pre-Q23/Post-Q15)*:
  - Pre-implementation data shows 95% of teachers reported assigning students open-ended problems prior to LDC implementation; Post-survey response shows that all (17) teachers reported *1-2 times/semester, monthly or weekly*.
- *Addressing Real-Life Problems (Pre-Q29/Post-Q21)*:
  - Pre-implementation data showed a range of *not at all* (33%) to *1-2 times/semester* (33%) and *monthly* (17%); in comparison post-data shows all teachers assigned real-life problems *1-2 times/semester* (71%), *monthly* (24%), and weekly (6%).
- *Use of Data to Justify Conclusions (Pre-Q20/Post-Q12)*:
  - Pre-implementation survey responses shows 89% of teachers required students to use data to justify conclusions at least *1-2 times/semester*, *monthly* or *weekly*; in comparison 94% reported *1-2 times/semester*, *monthly* or *weekly* in the post-survey.
- *Extended Projects (Pre-Q24/Post-Q16)*:
  - Pre-implementation data shows 83% of teachers required students to work on extended projects at least *1-2 times/semester*, and 17% (n=3) reported *1-2 times/month*; in comparison 71% reported *1-2 times/semester* in the post-survey, and 24% reported student extended project work at least *1-2 times/month*.
- *Group Work in Written Components (Pre-Q25/Post-Q17)*:
  - Pre-implementation data shows 78% of teachers required group written work *1-2 times/semester, monthly or weekly* in comparison to 100% of teachers reporting group work in writing post-implementation, an overall increase of 22%.

Two additional areas, *"Science Reading Comprehension"* and *"Compare and Contrast"* assignments shifted as follows:

- *Science Reading comprehension (Pre-Q28/Post-Q20)*
  - Pre-implementation data shows 84% of teachers required students to demonstrate reading comprehension through writing *1-2 times/semester*, *monthly*, *or weekly*; in comparison 100% of teachers required reading comprehension in student written work *1-2 times/semester (59%)*, *monthly (24%)*, *or weekly* (18%).
- *Compare and Contrast (Pre-Q17/Post-Q9)*
  - Pre-implementation data shows 66% of teachers required students to compare and contrast from one text to another *1-2 times/semester*, *monthly*, *or weekly*; in comparison (83%) of teachers reported increases in student work *1-2 times/semester (53%)*, *monthly (24%)*, *or weekly* (6%).

Does LDC PD support increased collaboration among Rural Collaborative teachers to share best practices in implementing LDC modules?

This question addresses two aspects of LDC implementation: 1) increased collaboration during implementation of LDC among teachers; and 2) sharing of best practices as teachers explored new skills in conducting LDC instruction in their classroom. *Figure 1* presents comparative survey data on teacher views on collaboration showing that collaboration with other C2 and C1 teachers to be a valuable aspect of their ability to implement their LDC modules beginning in the fall 2017 with Module 1, and continuing in spring 2018 with Module 2.

Pre/post implementation survey data showed that 17 of the 18 teachers (95%) indicated that collaboration and sharing best practices with other teachers was "Very Important" or "Somewhat Important." Post data show that all 18 teachers (100%) considered collaboration and sharing of best practices to be "Very Important" (78%) or "Somewhat Important" (22%). Increasing collaboration across content areas and across districts is a goal of both the Rural LDC project, as well as a more general goal of the Rural Collaborative consortia schools.

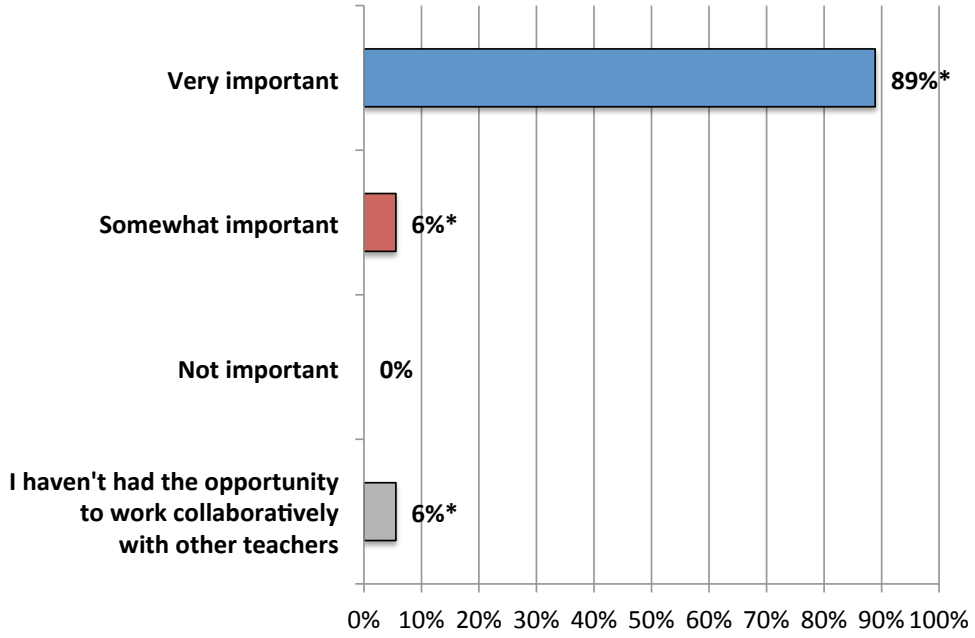
What are barriers or challenges that could impede LDC implementation?

Survey data regarding teacher identified challenges is presented in *Table 1*. The survey question provided teachers the opportunity to respond in an

"open ended" format, identifying any aspect of their experience during 2017-18. Data is organized thematically to show areas perceived by C2 teachers to

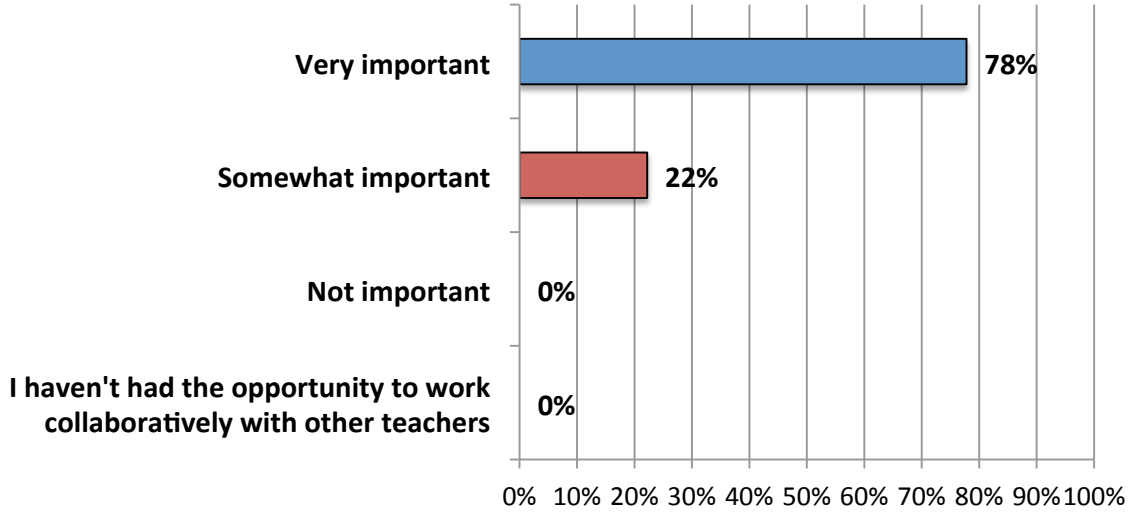
Figure 1: Collaboration and Sharing Best Practices with Other Teachers

Data collected from Pre-Implementation Survey (Q7)
(n= 18)



**All data is rounded to the nearest percentage point.*

Data collected from Post-Implementation Survey (Q3)
(n=18)



present potential challenges prior to implementation (*Pre-Q35*), and for each Module (*M1, Post-Q30; M2, Post Q33*).

TABLE 1: Challenges in Implementing LDC Modules with Students

Greatest Challenges	Teacher Grade Level		
	ANTICIPATED CHALLENGES (SPR/SUM 2017)	ENCOUNTERED CHALLENGES MODULE 1 (FALL 2017)	ENCOUNTERED CHALLENGES MODULE 2 (SPRING 2018)
	Pre Survey Q35 (n=18 respondents)	Post Survey Q30 (n=16 respondents)	Post Survey Q33 (n=16 respondents)
	MS (n=13)* HS (n=7)*	MS (n=12) HS (n=4)	MS (n=12) HS (n=4)
Time management	MS/HS	MS/HS	MS/HS
Managing content	MS/HS	MS/HS	MS/HS
Understanding how to implement LDC	MS/HS	MS/HS	MS
Collaborating with other teachers	MS/HS		
Managing student expectations	MS	MS/HS	MS
Feeling overwhelmed	HS	MS/HS	HS
Student engagement	MS	MS	MS
Access to resources	MS	MS	MS
Keeping students on task	MS	MS	
Student inexperience with science writing/research	MS		MS
Low student skills		MS	MS
Student accountability	MS		
Using CoreTools		MS	
Differentiation			MS

Pre Survey Q35: What do you anticipate to be your greatest challenge with implementing your LDC module with your students?
Post Survey Q30: What was your greatest challenge with implementing your first LDC module (fall 2017)?
Post Survey Q33: What was your greatest challenge with implementing your second LDC module (spring 2018)?
**Two teachers identified as teaching grade levels 5-12 (MS/HS).*

A comparative view of issues identified by teachers shows consistent pre/post data for both middle school (MS) and high school (HS) teachers who experienced challenges in both "time management" and in "managing content" integration with core content. The majority of the remainder of the issues identified were cited primarily by MS teachers who expressed a greater range of challenges compared with HS teachers once implementation of M1 was underway and continued into M2.

Table 2, taken from post-implementation data (*Q34*) shows that teachers self-reported eight aspects of implementation that provided support or assistance with module implementation, potentially overcoming challenges encountered.

Table 2: Most Helpful Aspects to Support Module Implementation

Helpful Aspects	Teacher Grade Level	
	Grades 5-8 (n=12)	Grades 9-12 (n=3)
Access to coaches	✔	✔
Working with Cohort 1 teachers	✔	✔
Professional development sessions	✔	
Collaboration with other LDC teachers	✔	
Having a model	✔	
Access to the LDC library	✔	
Previous work experience	✔	
Administrative support	✔	

Note, of the eight issues identified as helpful, six were identified only by the MS teachers, showing that these teachers were able to draw from the year 1 LDC resources, including the LDC library, and collaboration with C1 and C2 teachers.

What strategies are teachers employing to overcome these challenges in attaining best practices?

The pre/post survey data on C2 teacher confidence level with LDC implementation is presented in *Table 3*, defined by the LDC Science Literacy Program components.

Table 3: Pre/Post LDC Implementation Confidence Level

(Q40 Pre Survey respondents n=18)* (Q39 Post Survey respondents n=16)

Components of the LDC Instructional Model	Very Confident		Confident		Somewhat Confident		Not Confident		I Don't Know	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Construct an authentic science and literacy assignment [teaching task]	17%	19%	39%	56%	44%	25%	0%	0%	0%	0%
Identify a focus set of science standards to drive the assignment	44%	31%	44%	44%	11%	19%	0%	6%	0%	0%
Identify a focus set of common core literacy standards to drive the assignment	22%	25%	50%	44%	22%	25%	6%	6%	0%	0%
Select complex and content rich text(s) that align to a specific set of student learning goals	17%	25%	33%	50%	44%	19%	6%	6%	0%	0%
Select a student work product that is relevant to the student learning goals of the assignment*	12%	19%	65%	50%	24%	31%	0%	0%	0%	0%
Develop a quality instructional plan	17%	19%	44%	56%	39%	25%	0%	0%	0%	0%
Backward-design a sequence of skills from the assignment aligned to student learning goals	17%	13%	39%	63%	39%	19%	6%	6%	0%	0%
Develop instruction that allows students to demonstrate the skills needed to meet the expectations of the assignment	28%	25%	39%	56%	33%	13%	0%	6%	0%	0%
Develop instruction that allows for ongoing checks (scoring guide) for understanding student skill development	11%	13%	44%	44%	44%	44%	0%	0%	0%	0%
Collaborate with other LDC project teachers	33%	19%	33%	38%	33%	25%	0%	19%	0%	0%
Navigate LDC CoreTools**	N/A	6%	N/A	44%	N/A	31%	N/A	19%	N/A	0%

**Pre Survey Q40: Select a student work product that is relevant to the student learning goals of the assignment (n=17).*

***The LDC instructional model component **Navigate LDC CoreTools** was not included in the Pre-Implementation Survey.*

In *Table 3*, increases in "Confident" in the post-experience occurred in almost every category, shifting from "Somewhat Confident" (pre-survey), and slight increases in "Very Confident." A small number of shifts from "Very Confident" to "Confident" are also evident from pre to post in the areas of "setting science standards to drive the assignment," "backward design," and "instruction that allows students to demonstrate expected skill development." Note also that while collaboration is highly desired by teachers, in this table, "collaboration with other teachers" shifted across the board, with 19% of teachers reporting a lack of confidence in their ability to continue to collaborate with other LDC teachers. Overall however, teachers reporting confidence in their ability to implement LDC projects in the future ranges from 63% reporting confidence in their ability to "backward design," and 40% to 56% across all other categories in reporting confidence to implement LDC project learning in the future.

What do teachers view as benefits of LDC instructional practices?

Teachers had the opportunity to report on several ways in which their experience has benefitted students as well as their own approach to classroom teaching. *Table 4* shows self-reported teacher awareness of shifts in the classroom associated with LDC science instruction.

Table 4: LDC Associated Instruction in the Classroom

Shifts in Instructional Approaches	Teacher Grade Level	
	Grades 5-8 (n=11)	Grades 9-12 (n=3)
Focusing on more project based learning	✔	✔
Creating more writing and reading opportunities	✔	✔
Shifting to more real world learning	✔	✔
Improving development of project tasks	✔	
Incorporating design process with content	✔	
Highlighting long-term project based curriculum		✔
Adding more research-based projects		✔

In *Table 4*, seven categories were identified by teachers in an open-ended question (*Post-Q40*), showing that both MS and HS teachers were successful in adapting core aspects of the LDC program for classroom instruction. This also indicates teacher

perceived value for improving quality of instruction reflected in priority goals of the LDC Science Literacy Program for students.

Additionally when asked about direct impacts on student performance, teachers identified a range of impacts anticipated prior to instruction (*Pre-Q42*) and observed outcomes (*Post-Q43*) as shown in *Table 5*.

Table 5: Impacts on Student Performance

Anticipated/Pre: ◄ Observed/Post: ►		
Anticipated/Observed Impacts	Teacher Grade Level	
	Grades 5-8 (Pre n=12)** (Post n=10)	Grades 9-12 (Pre n=7)** (Post n=3)
Writing skills	◄ ►	◄ ►
Student growth	◄ ►	◄ ►
Student engagement	◄ ►	◄
Content retention	◄ ►	◄
Critical thinking	◄ ►	◄
Real world experience	◄ ►	◄
Design process	◄	◄ ►
Problem solving	◄ ►	
Reading fluency	◄	◄
Increased student focus	◄	
Student buy-in		◄
Research skills	►	
Learning from mistakes	►	

**Pre Survey Q42: Briefly describe any anticipated impacts on student performance using LDC instruction in your classroom.*

Post Survey Q43: Briefly describe any impacts on student performance that you observed this year associated with LDC instruction in your classroom.

***Two teachers identified as teaching grade levels 5-12.*

Table 6 also demonstrates value to students from the perspective of the teacher in considering impacts of "Design Thinking." Nearly all student benefits of design thinking anticipated by teachers were confirmed through observation during classroom implementation as reported in post-survey responses.

Table 6: Benefits of Design Thinking for Student Learning

Anticipated/Pre: ◄ Observed/Post: ►		
Design Thinking	Teacher Grade Level	
	Grades 5-8 (Pre n=12)* (Post n=13)	Grades 9-12 (Pre n=6)* (Post n=2)
Structured process	◄ ►	◄ ►
Real world	◄ ►	◄ ►
Product development	◄ ►	◄ ►
Nontraditional	◄ ►	◄
Backward design	◄ ►	◄
Hands-on experience	◄ ►	
Engineering principles		◄ ►
Open ended		►

Benefits to Students	Teacher Grade Level	
	Grades 5-8 (Pre n=12)* (Post n=13)	Grades 9-12 (Pre n=6)* (Post n=2)
Learning from mistakes	◄ ►	◄ ►
Problem solving	◄ ►	◄ ►
Structured process	◄ ►	◄ ►
Communication	◄ ►	◄ ►
Critical thinking	◄ ►	►
Seeing the big picture	◄ ►	►
Organizational skills	◄	►
Creativity	►	►
Research skills	►	►
Collaboration	►	►
Ownership of learning postMS/HS	►	►
Engagement	►	

**Two teachers identified as teaching grade levels 5-12.*

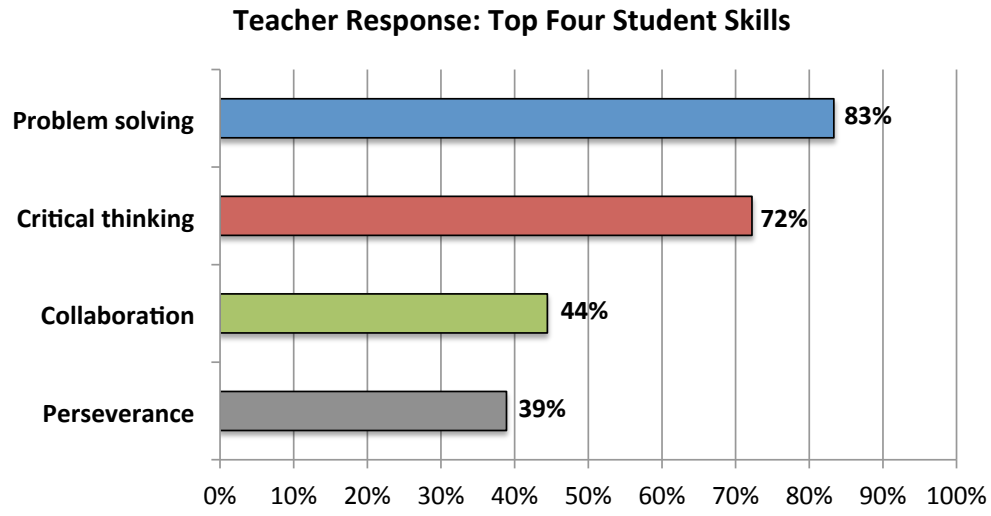
Additionally, it is notable that both MS and HS teacher anticipated benefits and expectations for students were met in observed experience working with students. Both MS and HS teachers also observed other benefits in areas that teachers had not

anticipated including, "creativity," "research skills," "collaboration," "ownership of learning," and "student "engagement."

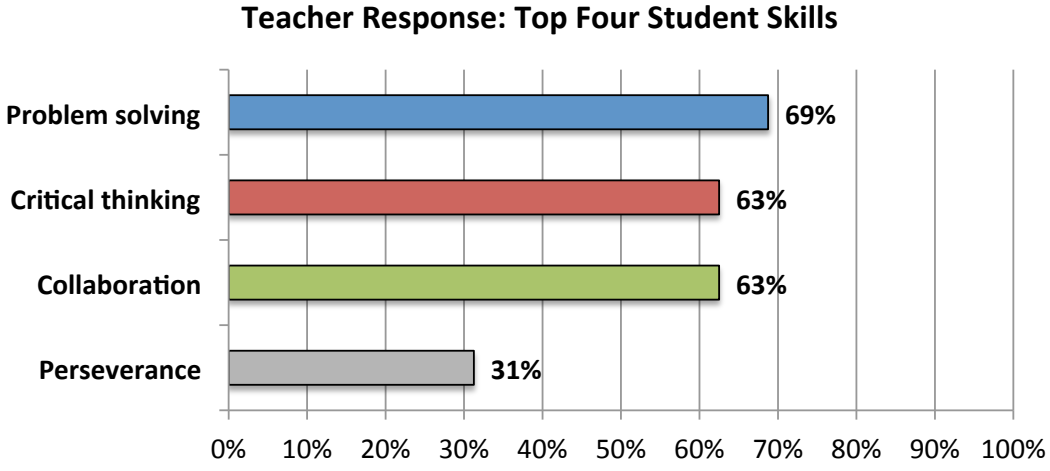
In a final question posed to teachers regarding the most important skills for students to attain, ***Figure 2*** shows that all teachers cited the same top skills from a pre-defined list of (12) categories (see *Appendix A: Comparative Survey Report*).

FIGURE 2: Pre/Post Top Four Desired Skills for Students

Pre-Survey Q 43 (n=16)



Post-Survey Q44 (n=18)



It is interesting to note that with post-implementation experience, teachers viewed the top three desired skills nearly equally, showing an increase in the value of "collaboration" as an important experience for high quality student learning.

Concluding Remarks

The overall evaluation of the second year data on implementation of the Rural LDC Project demonstrates that the project has advanced strategic goals for integrating skill sets to support STEM education and is consistent with Year 1 outcomes. Professional development and classroom instructional support for teachers also contributed to teacher confidence in attaining success in conducting positive student experiences in classroom implementation. Key to this process involved gains in student problem solving skills based on extended project work involving design thinking, science literacy, collaborative teamwork, and exploration of student driven inquiry. Collectively these are the hallmark of design cycle thinking that guides students through phases of project development that include research, build, evaluation, modification, and communication to authentic audiences reporting on project experiences and knowledge gained. Broadly viewed, these meaningful and impactful learning experiences can contribute to student perceptions of real-life, real-world views and understanding.

APPENDIX:

Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (LDC)
Final Report

Appendix A:
Rural LDC Cohort 2 Comparative Survey Report: The Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (LDC) August 10, 2018

Appendix B:
Pre-Implementation (May 2017) and Post-Implementation Survey (March 2018) Question Sets

Appendix C:
LDC Cohort 2 Pre/Post Surveys - List of Comparative Questions

Appendix D:
Pre-Implementation Aggregated Data Survey Report October 20, 2017

Appendix E:
Post-Implementation Aggregated Data Survey Report March 30, 2018

Appendix A:

Rural LDC Cohort 2 Comparative Survey Report:
The Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (LDC)
August 10, 2018

Rural LDC Cohort 2 Comparative Survey Report

The Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (LDC)

August 10, 2018

This document is the final report of survey responses for the LDC Science and Literacy Project 2017-2018 Cohort 2 Pre- and Post-Implementation Surveys. Project districts include: Northwestern Local Schools, Mapleton Local Schools, Hillsdale Local School District, Loudonville-Perrysville Exempted Village Schools, and Black River Local Schools. The pre and post-implementation surveys were completed by Cohort 2 teachers (n=18).

The report presents bar charts for the pre-implementation survey responses for Qs 1-34, Qs 36-40, and Q43. Bar charts are presented for post-implementation survey responses for Qs 2, 4-22, 24-29, 31-32, 35-39, 41-42, and 44. Open-ended responses for the pre-implementation survey (Qs 35, 41, 42) and the post implementation survey (Qs 23, 30, 33, 34, 40 and 43) are presented in table format in this report.

SURVEY PROTOCOL

Surveys were administered via a secure web-based platform (SurveyMethods®) designed for conducting a confidential and anonymous survey. Survey participants were asked to review survey protocols prior to voluntary agreement to participate in the pre-implementation survey.

Pre-Implementation Survey

The Rural Collaborative Cohort 2 Teacher pre-implementation survey was administered during pre-implementation training for Cohort 2 professional development sessions held in 2017. Training for fall implementation was conducted during spring 2017, on May 10th and May 17th, with a make-up date for the first session held on May 15th. For those unable to participate in May, training was held August 31st to September 1st. The pre-implementation survey was administered on two dates to coincide with pre-implementation training: May 17th (n=10), and September 1st (n=8). The pre-implementation survey report was submitted to the LDC Implementation Team for review and discussion on October 20, 2017 to support implementation planning for Cohort 2 teachers during the 2017-18 school year.

Post-Implementation Survey

The Rural Collaborative Cohort 2 Teacher post-implementation survey (n=18) was administered during the spring 2018 LDC professional development session on Wednesday, March 7th. The preliminary post-survey report was submitted on March 30, 2018 to the project Implementation Team.

SUMMARY OF PRE-IMPLEMENTATION SURVEY QUESTIONS AND ISSUES

Q2 presents six training dates and asks teachers to indicate dates he/she attended.

Qs 3 and 4 are profile questions.

Q5 and Qs7-9 are questions regarding teachers' experiences in their careers. Teachers were asked about past professional development experience, and if they have experience with coaching other teachers or leading professional development sessions. Teachers were also asked about co-teaching, collaboration and sharing best practices with other teachers.

Q6, Qs10-13 are questions regarding teachers' preferred instructional practices and tools. Teachers were asked to indicate their level of comfort with using computers as an instructional tool, and working with students in teams or small groups as part of their instructional practice in their classroom. Teachers were also asked to indicate which methods they prefer from a drop-down menu in planning for classroom instruction. Teachers were asked how often they explore the internet for instructional/teaching resources, and how often they share instructional/teaching resources with other teachers.

Qs 14-30 are questions regarding teachers' past instructional practices related to requiring students to conduct research and complete written components of class assignments.

Qs 31-32 asked teachers if they provide students with a scoring rubric at the beginning of a project to indicate what is required for the student to be scored 'proficient' or above, and if so, do they use the same rubric over time to provide students with feedback on how they are progressing.

Qs 33-34 asked teachers how important is it for administrators and parents to know about and understand the LDC science instructional strategies.

Qs 35-37 are questions regarding implementation of the LDC science module. *Q35* asked teachers to identify the biggest challenge(s) they anticipate with implementation of the LDC module with their students. *Q36* provides feedback from teachers about importance of access to LDC coaches during implementation of LDC science modules in their classroom. *Q37* asked teachers to self-evaluate how well prepared they are to implement their LDC module in their classroom.

Qs 38-40 asked teachers to self-evaluate their LDC module and implementation strategy. *Q38* asked teachers to rate the status of their first LDC module. *Q39* asked teachers to rate their confidence level with specific aspects of implementing the LDC science module, and *Q40* asked teachers to self-evaluate their understanding and ability to implement components of the LDC instructional model. Teachers selected from a drop-down menu of skills associated with the LDC instructional model.

Qs 41-42 are open-ended questions asking teachers to describe specific aspects of the LDC science module and impacts on student learning and performance. *Q41* asked teachers to briefly describe

"Design Thinking" and particular benefits for student learning. *Q42* asked teachers to briefly describe anticipated impacts on student performance using LDC modules in their classroom.

Q43 asked teachers to identify from a drop-down menu the top three skills they think are most important for students to prepare for the future.

SUMMARY OF POST-IMPLEMENTATION SURVEY QUESTIONS AND ISSUES

Q2 is a profile question.

Qs 3-5 are questions regarding experience with coaching, mentoring, and collaborating with other teachers, specifically during the first year of LDC implementation. Teachers were asked to indicate how important it is to collaborate and share best practices with other teachers, and if they engaged in collaboration with other LDC teachers in any way in the first year of implementation. Teachers were also asked if they engaged in mentoring, coaching other teachers or leading professional development sessions during the 2017-18 school year.

Qs 6-22 are questions regarding teachers' classroom instructional practices during their first year of LDC implementation related to requiring students to conduct research and complete written components of class assignments.

Q23 is an open-ended question asking teachers to briefly describe "design cycle thinking" and whether there are particular benefits for student learning.

Q24 and Q26 asked teachers if they think building administrators and parents were provided sufficient information to understand the LDC Science and Literacy Project.

Q25 and Q27 asked teachers how important is it for administrators and parents to understand the LDC instructional strategies and model.

Qs 28-33 are questions regarding implementation of the LDC module. Q28 asked teachers to describe their first LDC module. Q29 asked teachers how many additional hours they worked beyond the on-site PD days to prepare for the November 21st review session. Q30 is an open-ended question describing the greatest challenge with implementing their first LDC module (fall 2017). Q31 asked teachers to describe their second LDC module. Q32 asked teachers how many additional hours they worked beyond the on-site PD days to prepare for the March 7th review session. Q33 is an open-ended question asking teachers to describe their greatest challenge with implementing their second LDC module (spring 2018).

Qs 34-38 are questions regarding support and communication during the second year of the LDC Project. Q34 is an open-ended question asking teachers what was most helpful to support implementation in their classroom during their first year of the LDC project. Q35-37 provides feedback from teachers on the importance of access to LDC training facilitators and Cohort 1 teachers, as well as on-site coaching during

the Cohort 2's first year of the LDC Science and Literacy project. Q38 asked teachers to select their preferred ways to receive feedback on their LDC modules between professional development workshops. Q39 asked teachers to self-evaluate their confidence level in implementing aspects of the LDC instructional model in the classroom.

Q40 is an open-ended question asking teachers to briefly describe any shifts in their instructional approaches that they associate with LDC science instruction in their classroom.

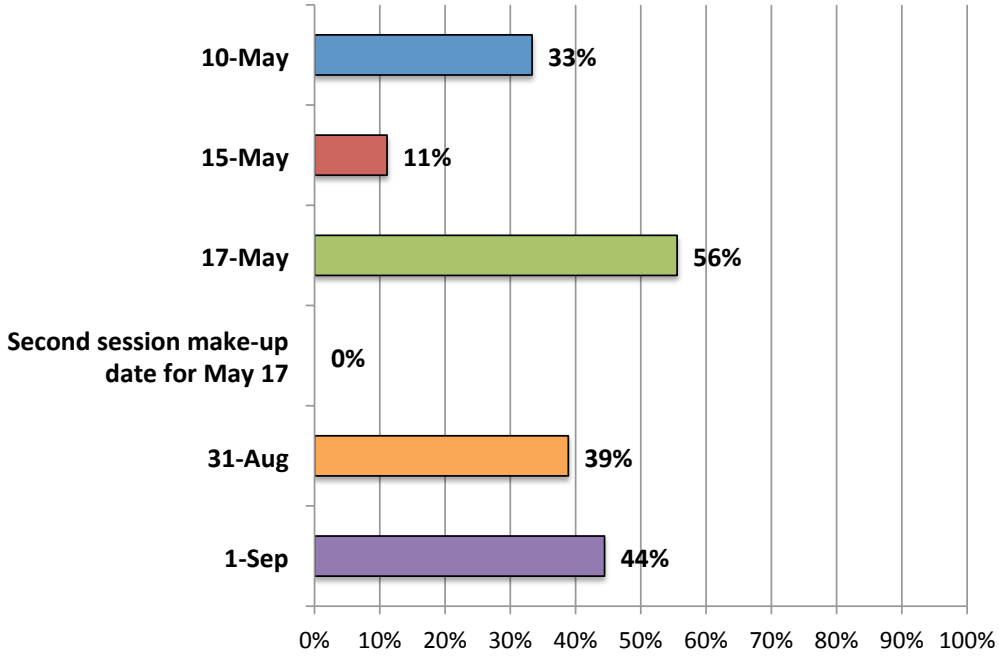
Qs 41-42 asked teachers if they plan to use LDC science modules in the 2018-2019 school year, and if so, whether they plan to engage in cross-content collaboration with other teachers.

Q43 is an open-ended question asking teachers to briefly describe observed impacts on student performance associated with LDC instruction in their classroom.

Q44 asked teachers to identify the top three skills they think are most important for students to prepare for the future. Teachers selected from a drop-down menu of skills associated with the LDC instructional model.

Pre Q2: On which of the following dates did you participate in LDC training?

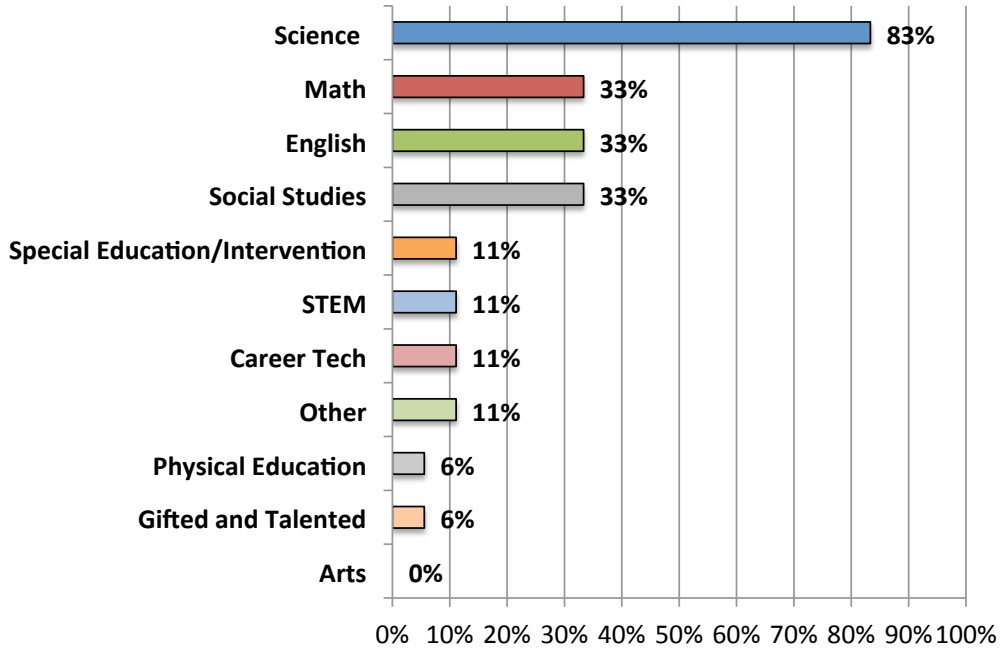
Data collected from Pre-Implementation Survey
(n=18)



Note: Respondents were given the option of selecting more than one response category if applicable.

Pre Q4: In your teaching career, which content areas have you taught?

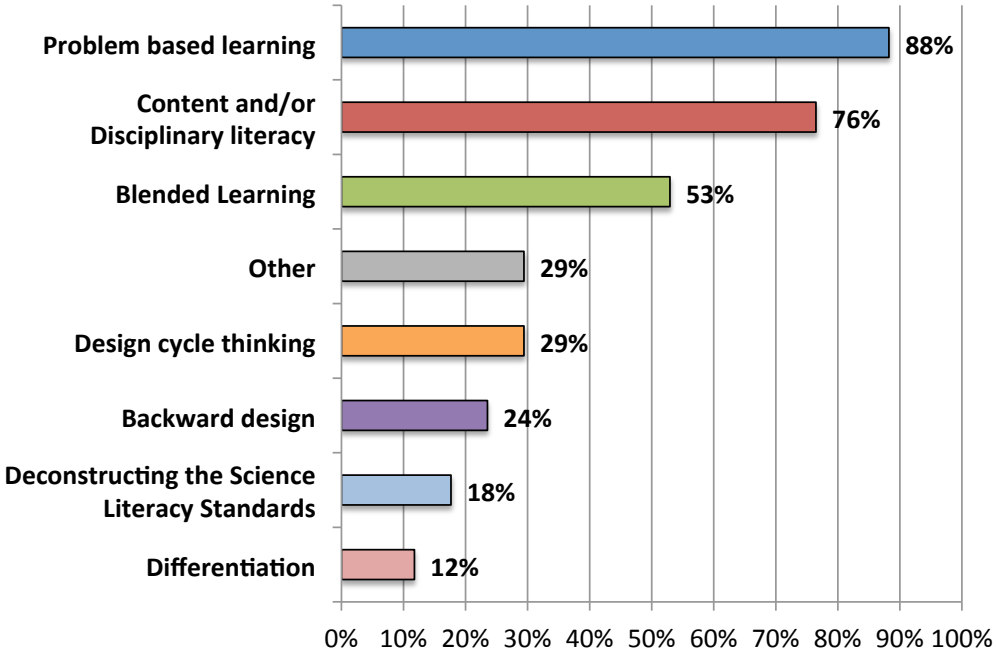
Data collected from Pre-Implementation Survey
(n= 18)



Note: Respondents were given the option of selecting multiple response categories if applicable, as well as the option of an "if other" response, which is reflected in the ***Other*** *category (n=2). Two respondents shared that they have taught Elementary Core Content and Agricultural Education in their teaching careers.*

Pre Q5: In your teaching career, what professional development experiences have you had?

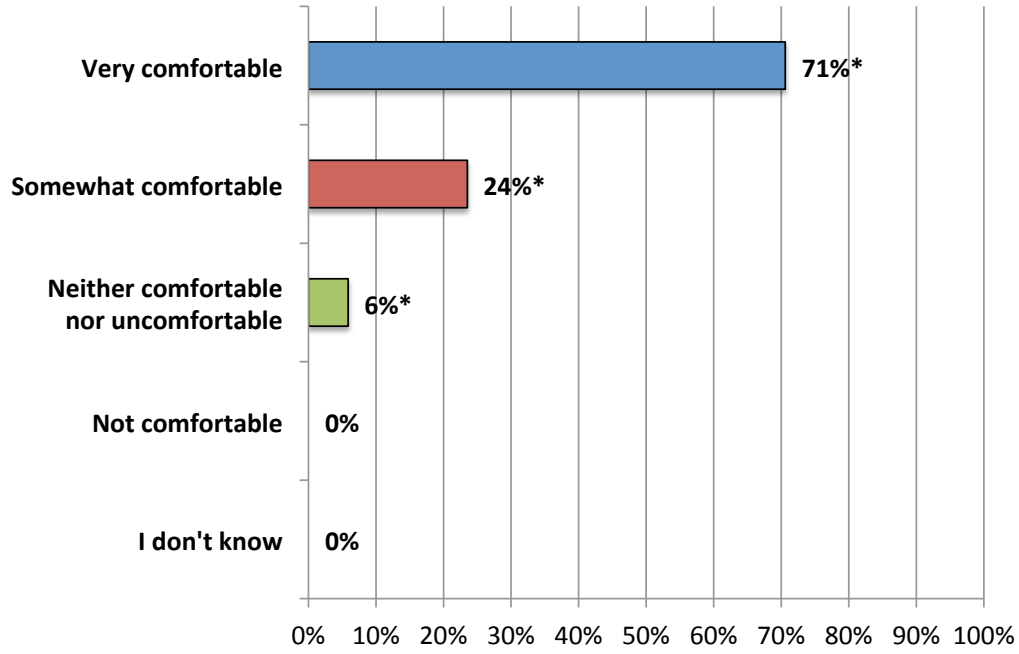
Data collected from Pre-Implementation Survey
(n= 18)



Note: Respondents were given the option of selecting multiple response categories if applicable, as well as the option of an "if other" response, which is reflected in the **Other** *category (n=5). Five respondents shared they had the following professional development experiences: Inquiry, STEM Training, Reading Endorsement Conceptual Chemistry course, FIP Unpacking the LA Standards, MAX Teaching.*

Pre Q6: How comfortable are you using computers as an instructional tool with your students?

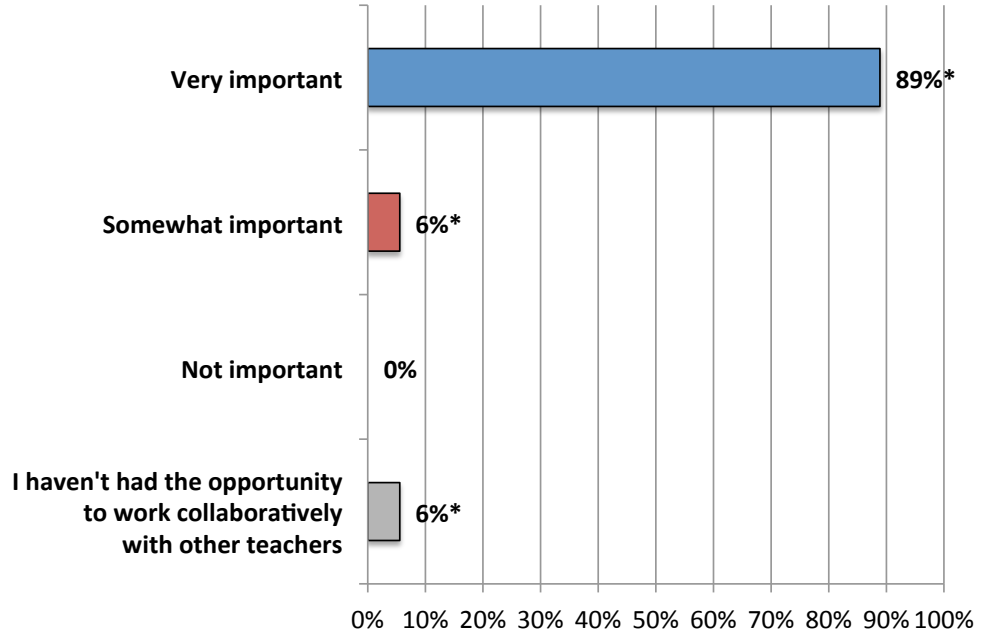
Data collected from Pre-Implementation Survey
(n= 17)



**All data is rounded to the nearest percentage point.*

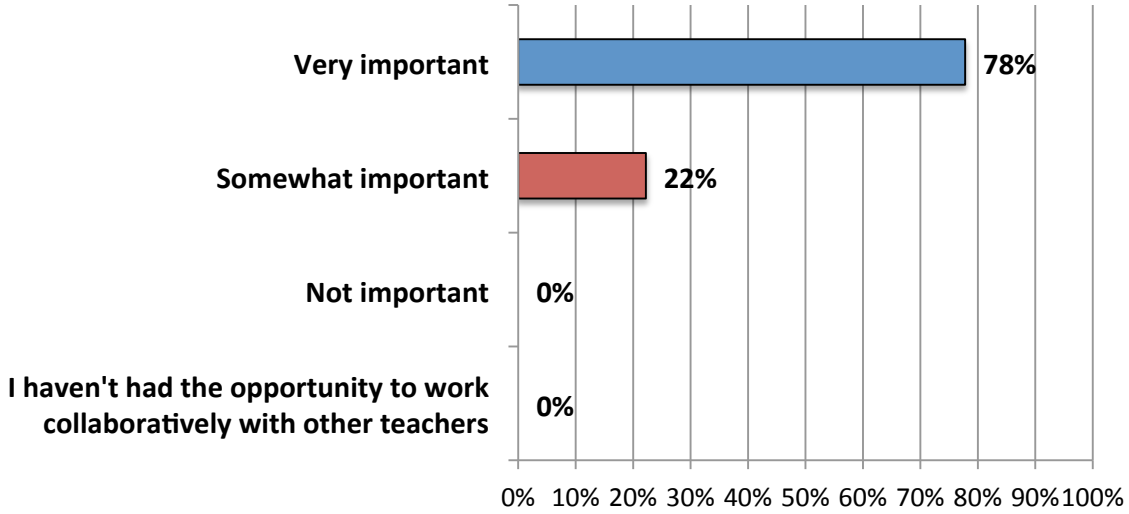
In your experience, how important is collaboration and sharing best practices with other teachers?

Data collected from Pre-Implementation Survey (Q7)
(n= 18)



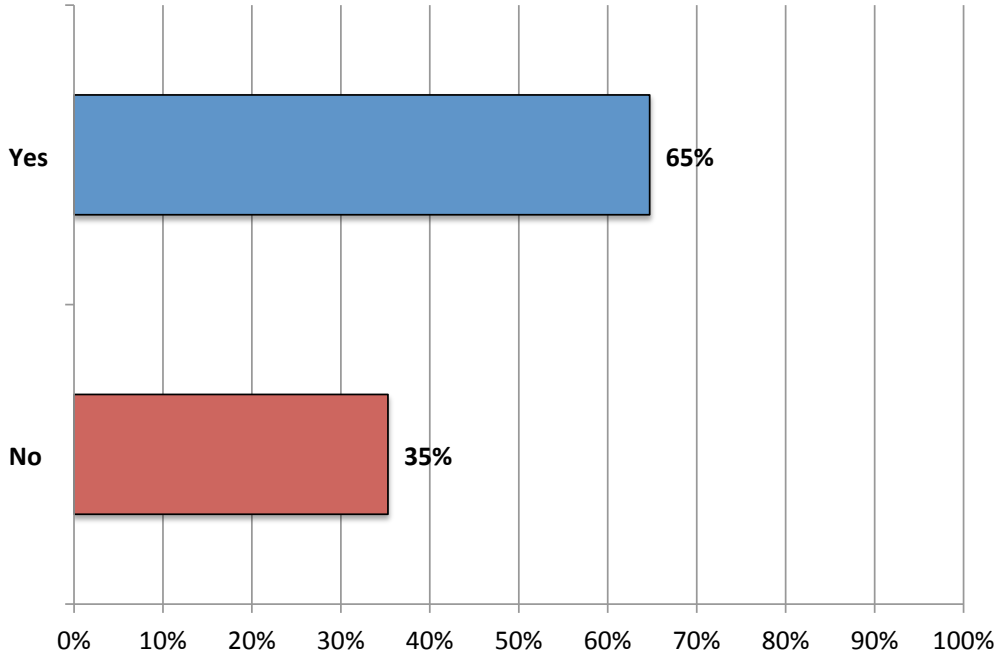
**All data is rounded to the nearest percentage point.*

Data collected from Post-Implementation Survey (Q3)
(n= 18)



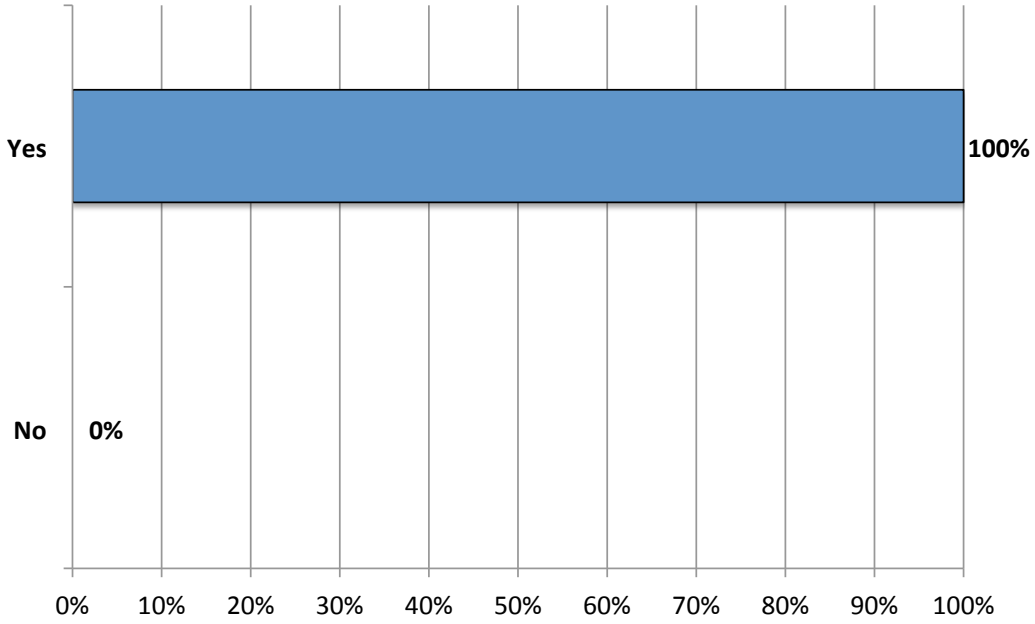
Pre Q8: In your teaching career have you had experience co-teaching a class with another teacher?

Data collected from Pre-Implementation Survey
(n= 17)



In the 2017-18 year of LDC implementation did you engage in collaboration with other LDC teachers in any way?

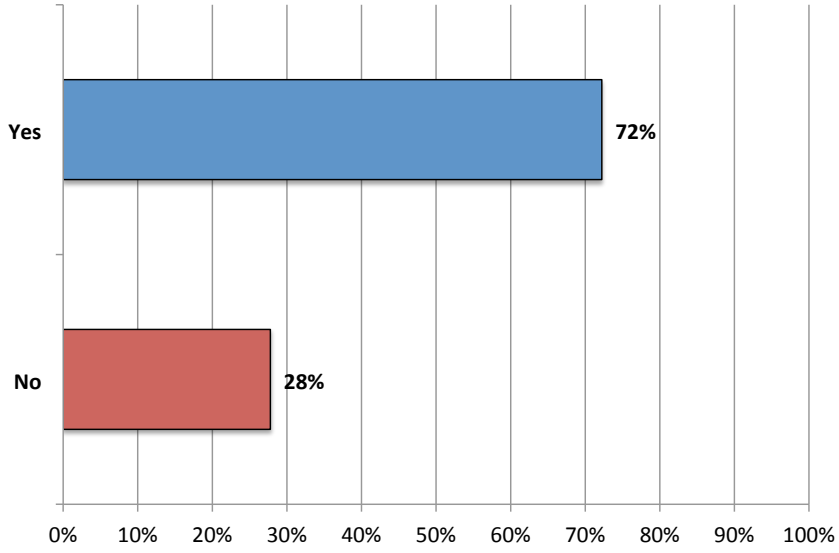
Data collected from Post-Implementation Survey (Q4)
(n= 18)



Have you had experience in mentoring, coaching, or leading professional development for other teachers...

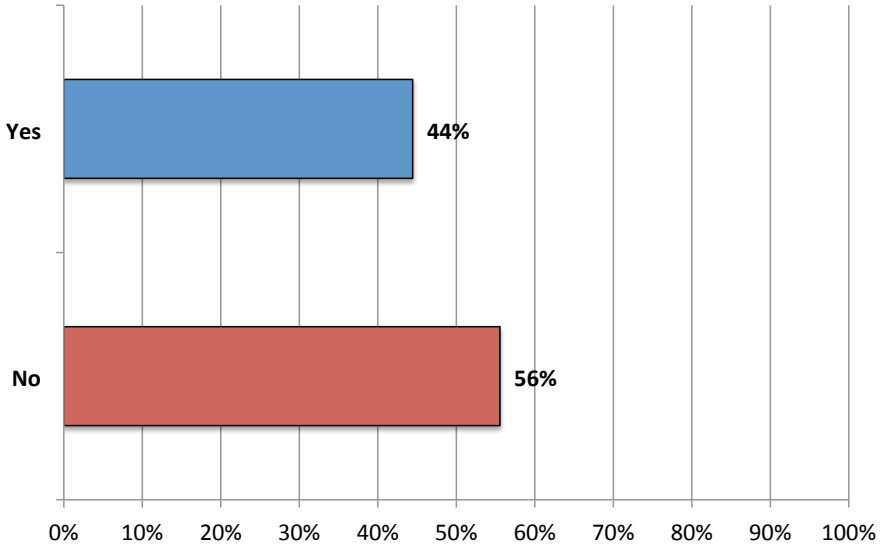
...in your teaching career?

Data collected from Pre-Implementation Survey (Q9)
(n= 18)



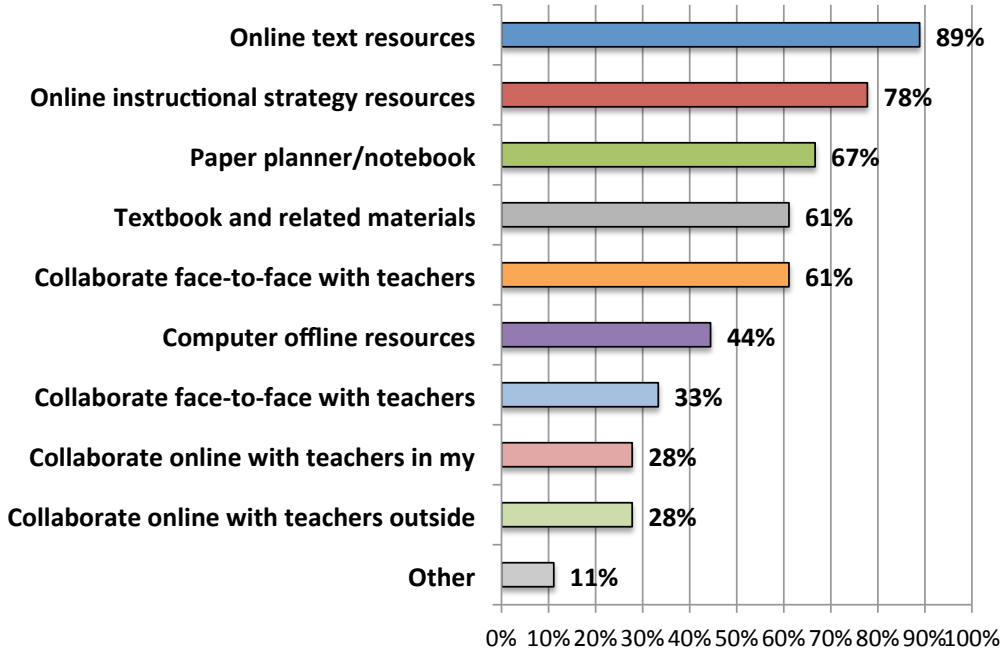
...during the 2017-18 school year?

Data collected from Post-Implementation Survey (Q5)
(n= 18)



Pre Q10: In planning for classroom instruction, which method(s) do you prefer?

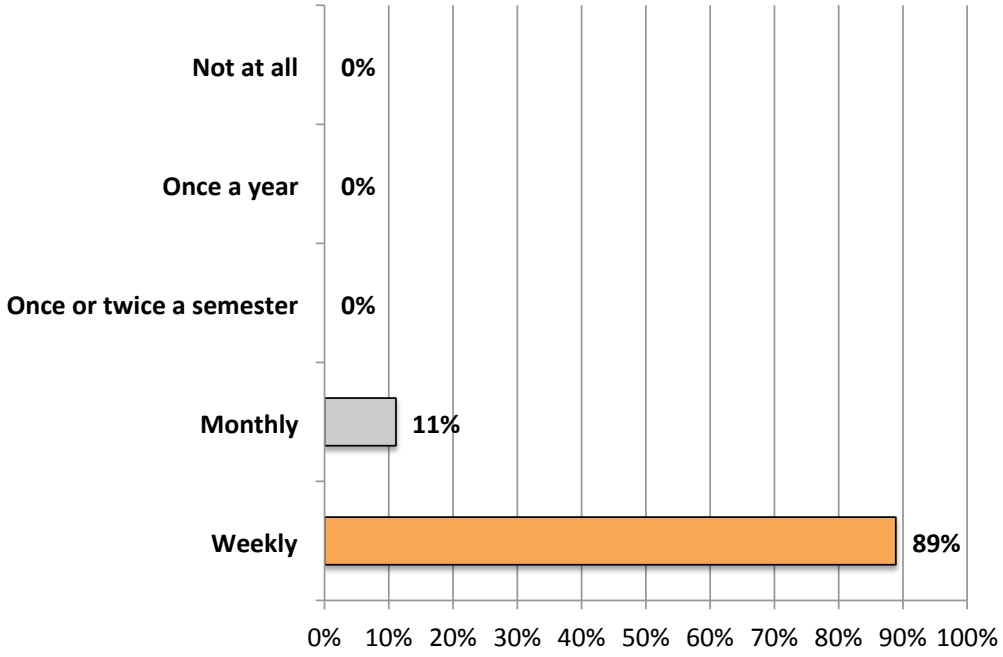
Data collected from Pre-Implementation Survey
(n= 18)



Note: Respondents were given the option of selecting multiple response categories if applicable, as well as the option of an "if other" response, which is reflected in the Other category (n=2). One respondent shared that they prefer interactive and virtual sites, and another respondent shared that that their preferences depend on the area of focus.

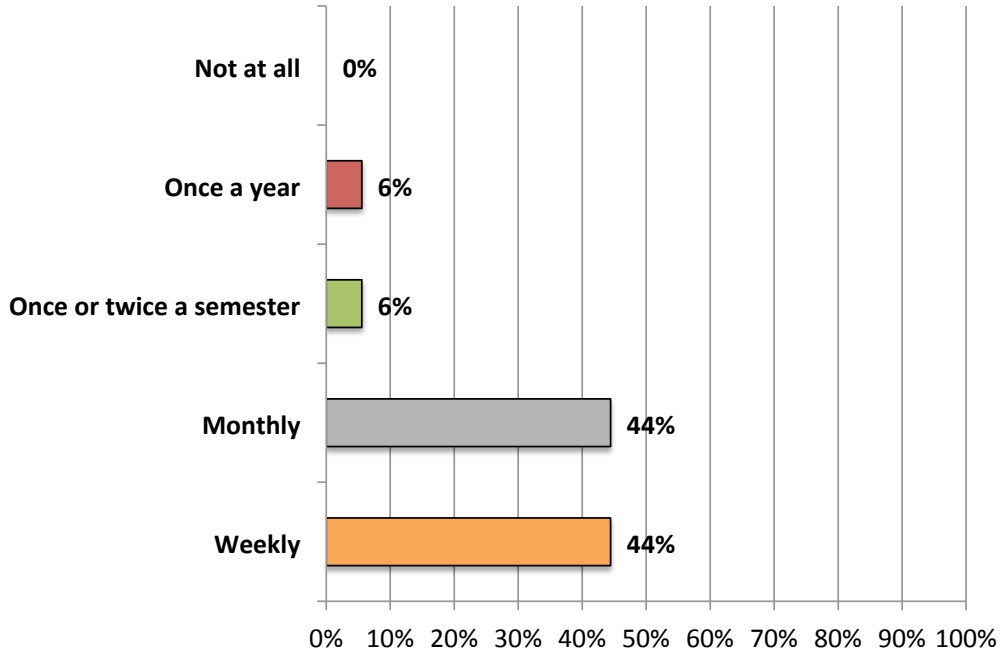
Pre Q11: How often do you explore the internet for instructional/teaching resources?

Data collected from Pre-Implementation Survey
(n= 18)



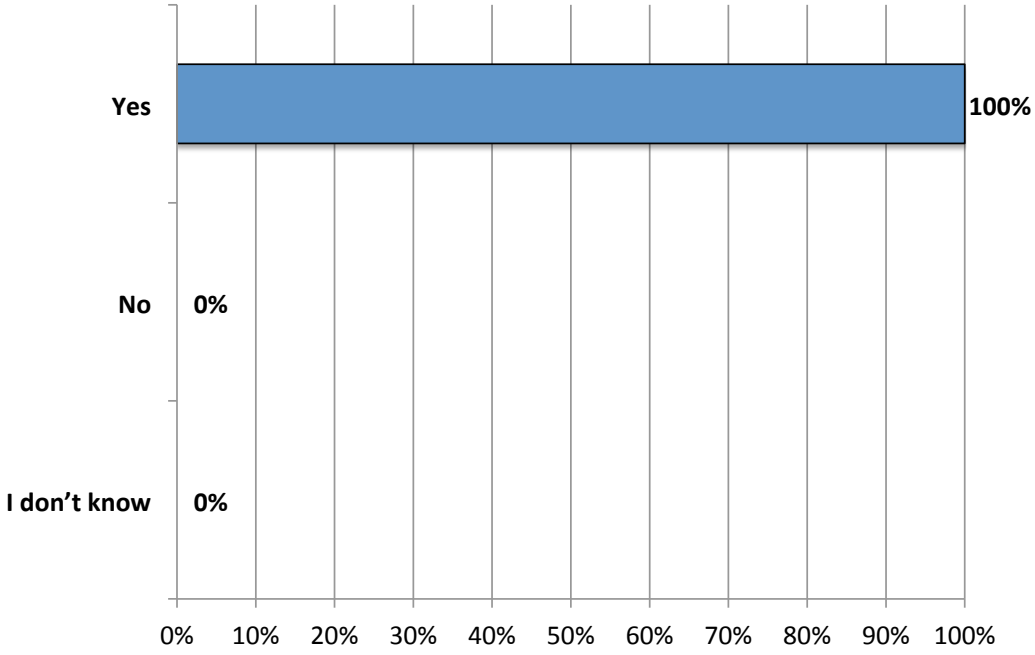
Pre Q12: How often do you share instructional/teaching resources with other teachers?

Data collected from Pre-Implementation Survey
(n= 18)



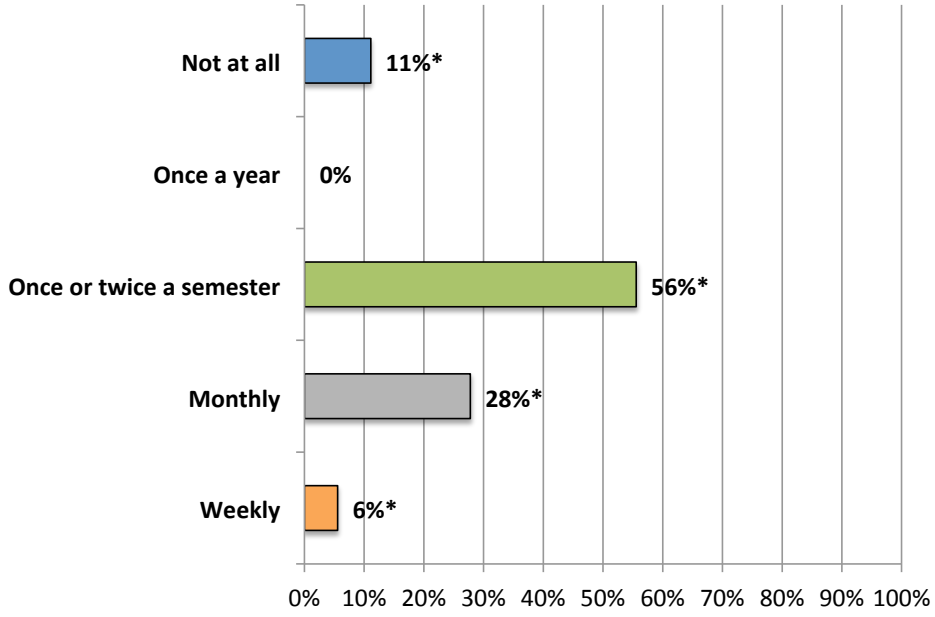
Pre Q13: Do you feel comfortable with students working in teams or small groups as part of your instructional practice in your classroom?

Data collected from Pre-Implementation Survey
(n= 18)



I have required my students to write in-depth explanations about a class project or activity.

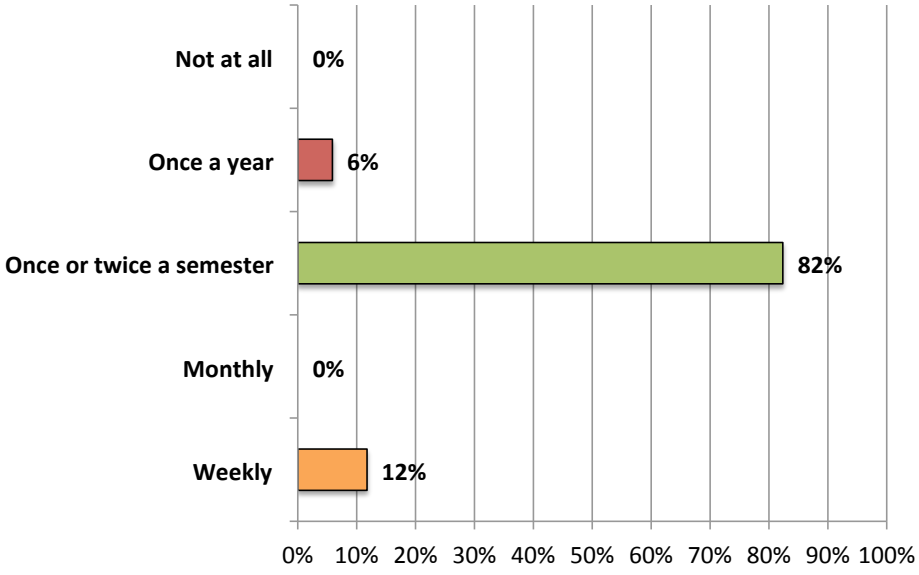
Data collected from Pre-Implementation Survey (Q14)
(n= 18)



**All data is rounded to the nearest percentage point.*

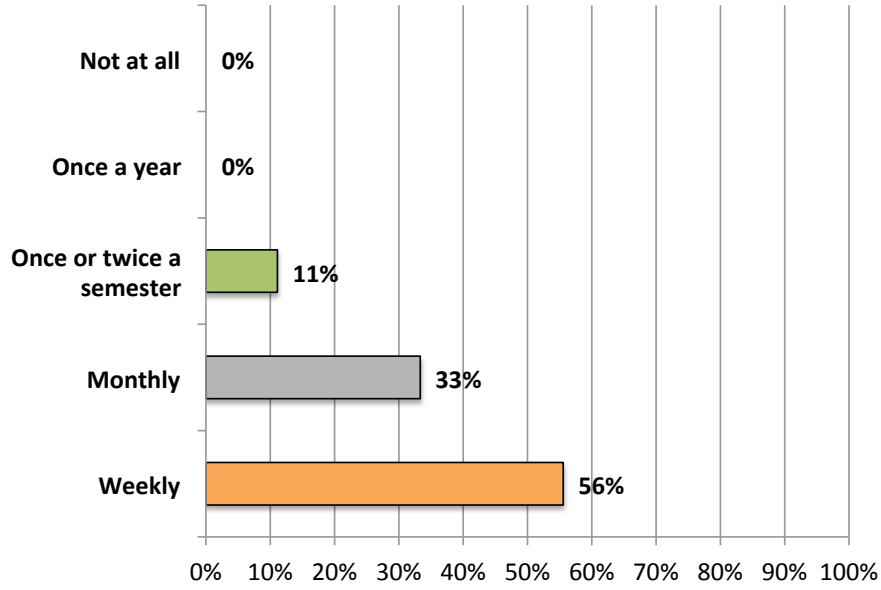
...during the 2017-18 school year.

Data collected from Post-Implementation Survey (Q6)
(n= 17)

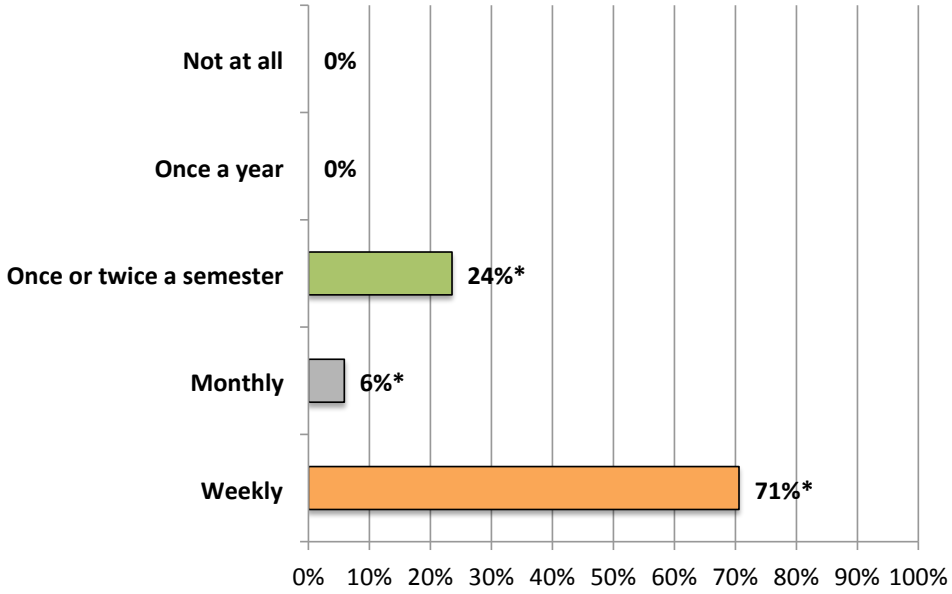


I have required my students to use computers or technology to complete an assignment or project.

Data collected from Pre-Implementation Survey (Q15)
(n= 18)



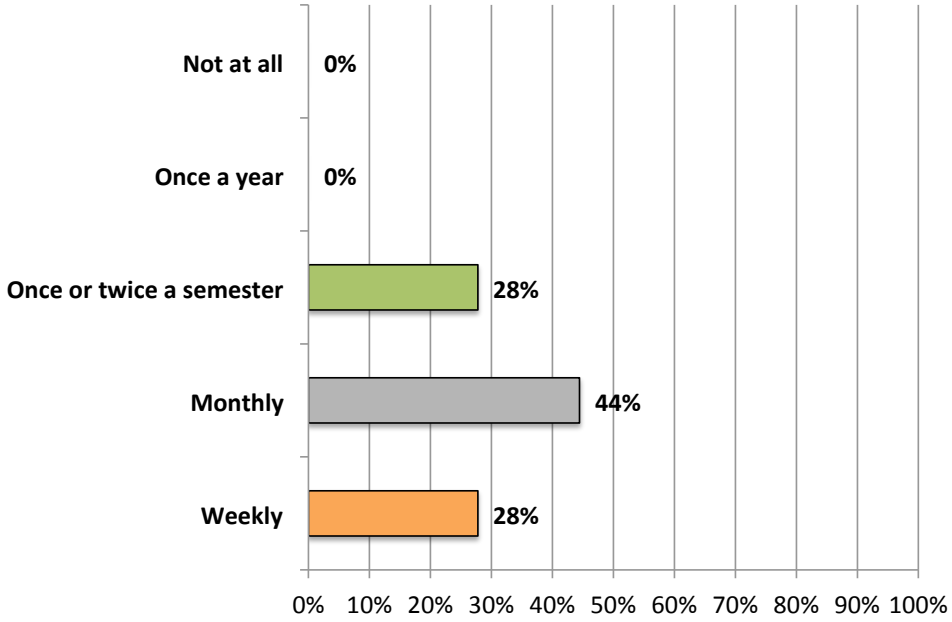
Data collected from Post-Implementation Survey (Q7)
(n= 17)



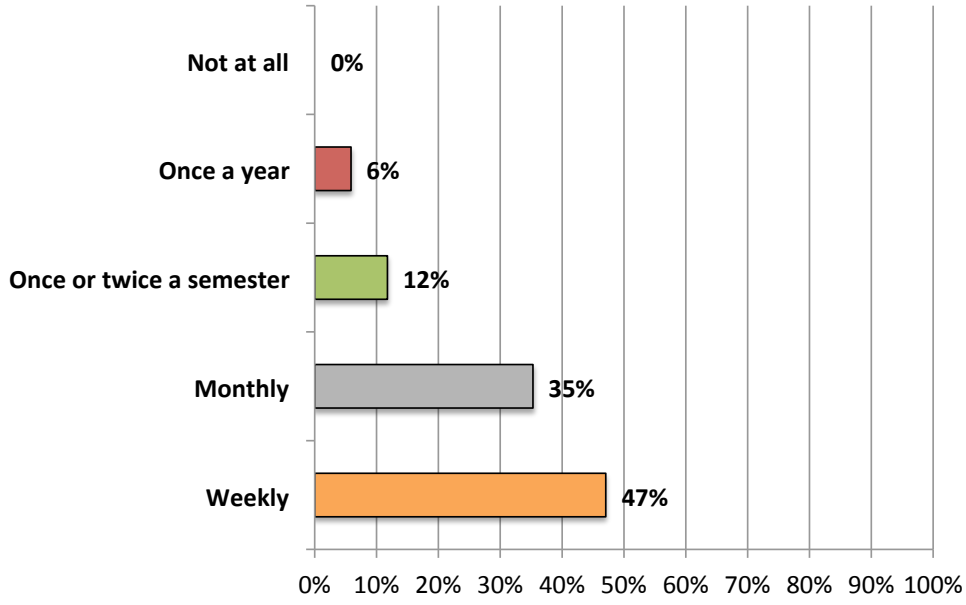
**All data is rounded to the nearest percentage point.*

I have assigned reading to my students in addition to the class textbook.

Data collected from Pre-Implementation Survey (Q16)
(n= 18)

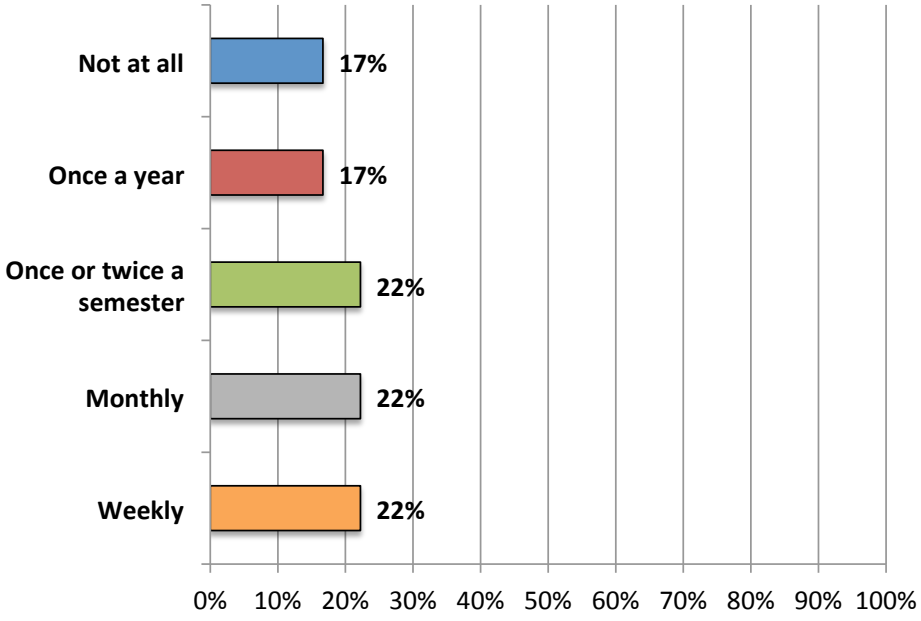


Data collected from Post-Implementation Survey (Q8)
(n= 17)

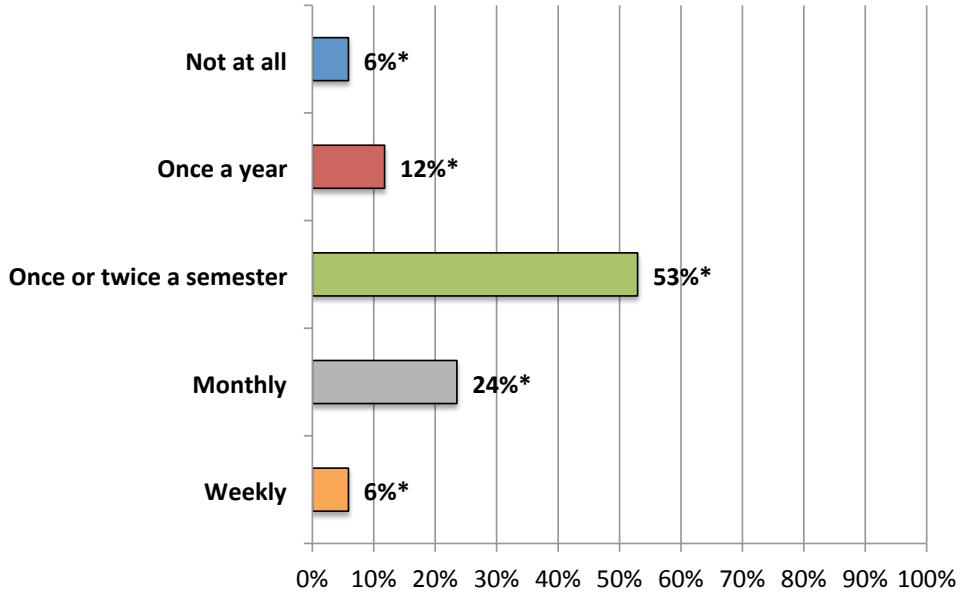


I have required my students to compare and contrast information from one text to another.

Data collected from Pre-Implementation Survey (Q17)
(n= 18)



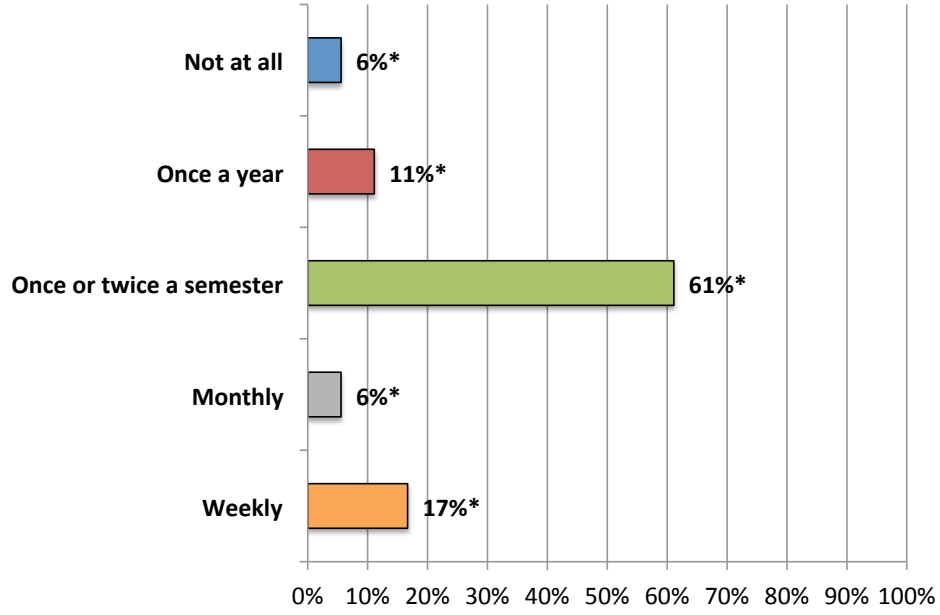
Data collected from Post-Implementation Survey (Q9)
(n= 17)



**All data is rounded to the nearest percentage point.*

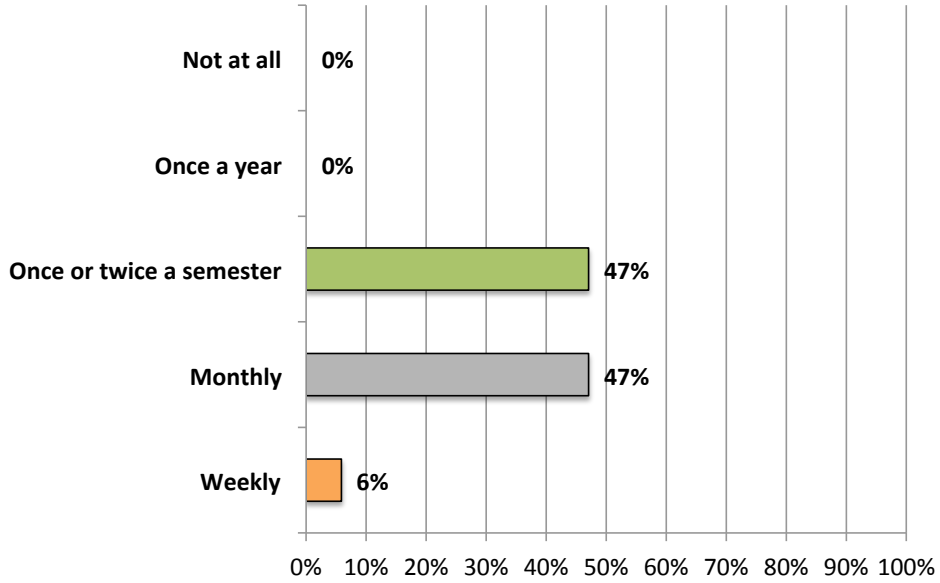
I have required my students to produce writing assignments that make them defend their thinking with support and evidence from what they are reading.

Data collected from Pre-Implementation Survey (Q18)
(n= 18)



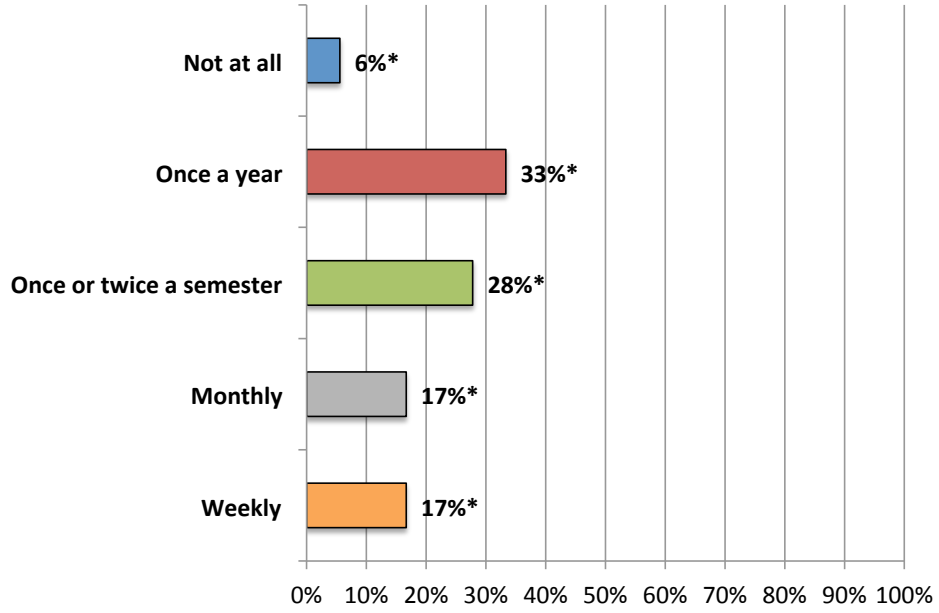
**All data is rounded to the nearest percentage point.*

Data collected from Post-Implementation Survey (Q10)
(n= 17)



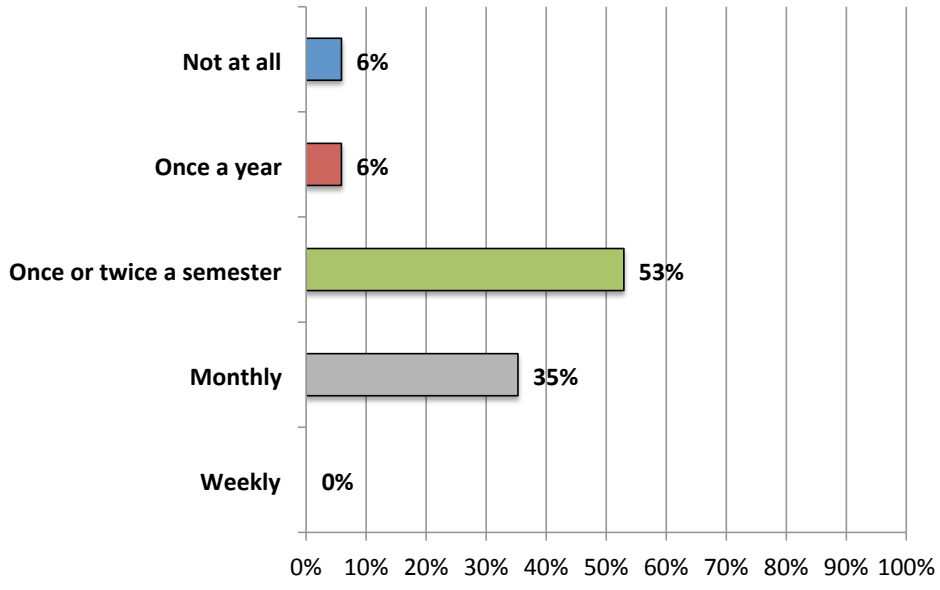
I have required my students to orally defend their conclusions from an investigation or project before their peers.

Data collected from Pre-Implementation Survey (Q19)
(n= 18)



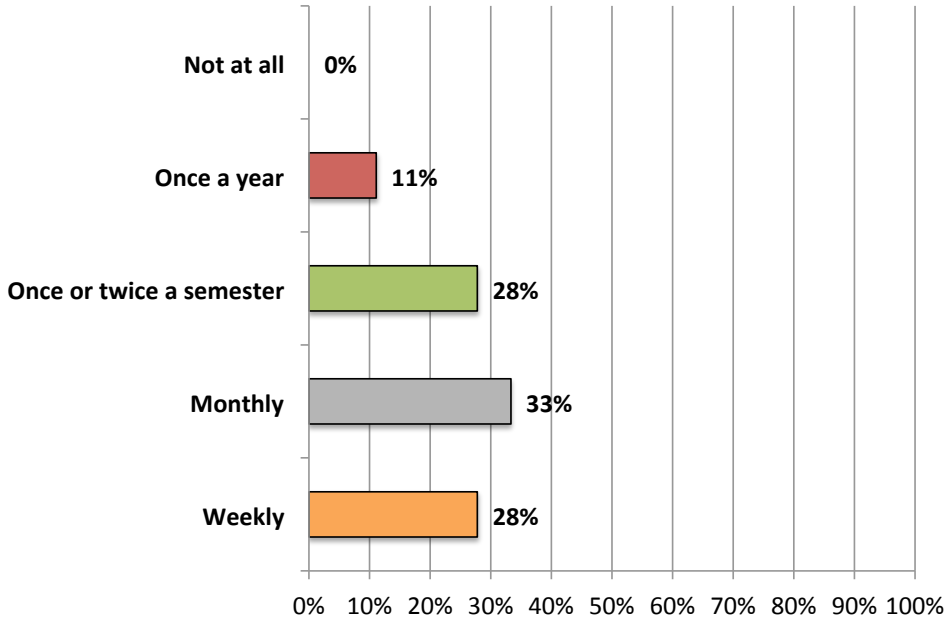
**All data is rounded to the nearest percentage point.*

Data collected from Post-Implementation Survey (Q11)
(n= 17)

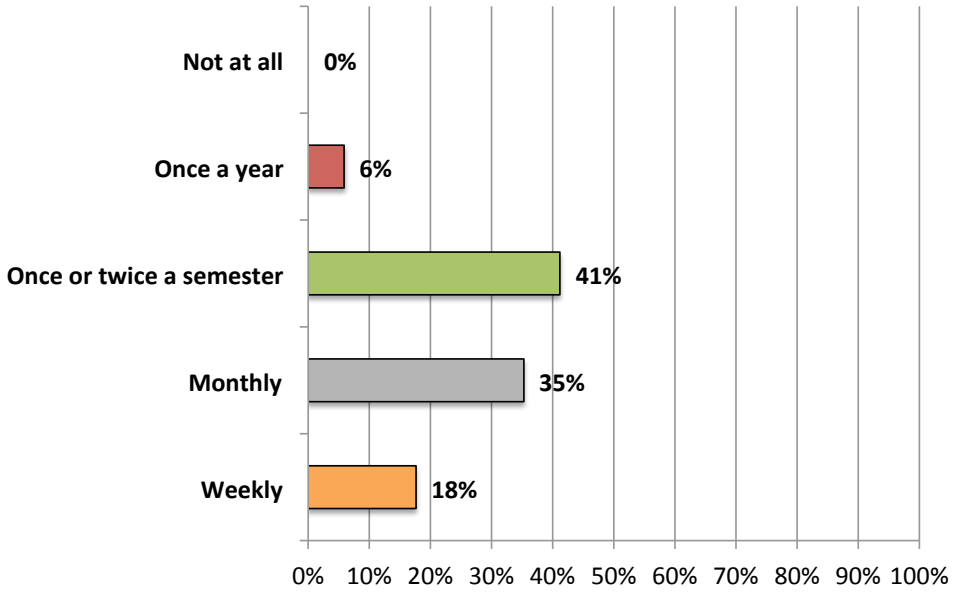


I have required my students to use data collected during investigations or projects to justify and defend their conclusions.

Data collected from Pre-Implementation Survey (Q20)
(n= 18)

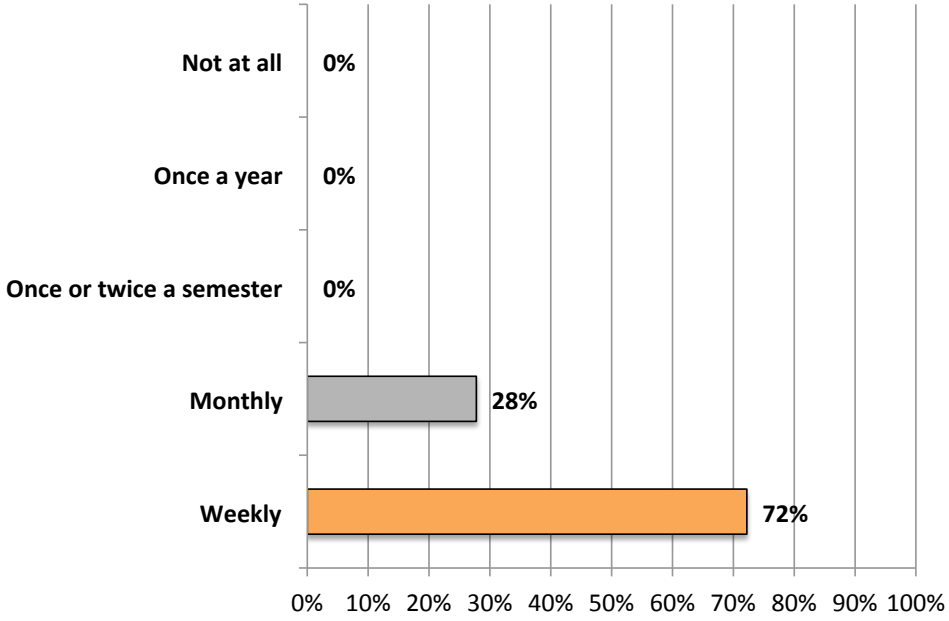


Data collected from Post-Implementation Survey (Q12)
(n= 17)

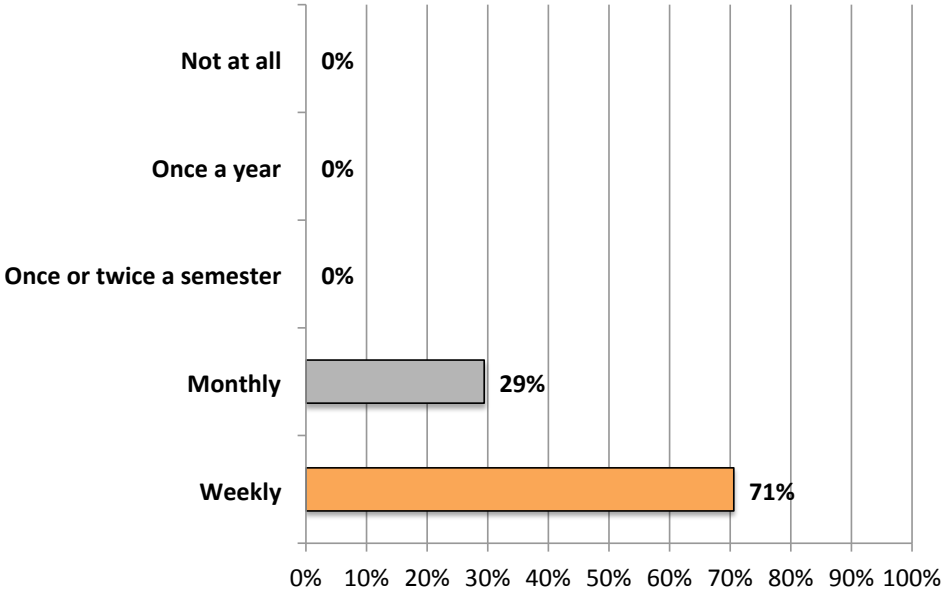


I have required my students to complete assignments using the vocabulary associated with the subject area being taught.

Data collected from Pre-Implementation Survey (Q21)
(n= 18)

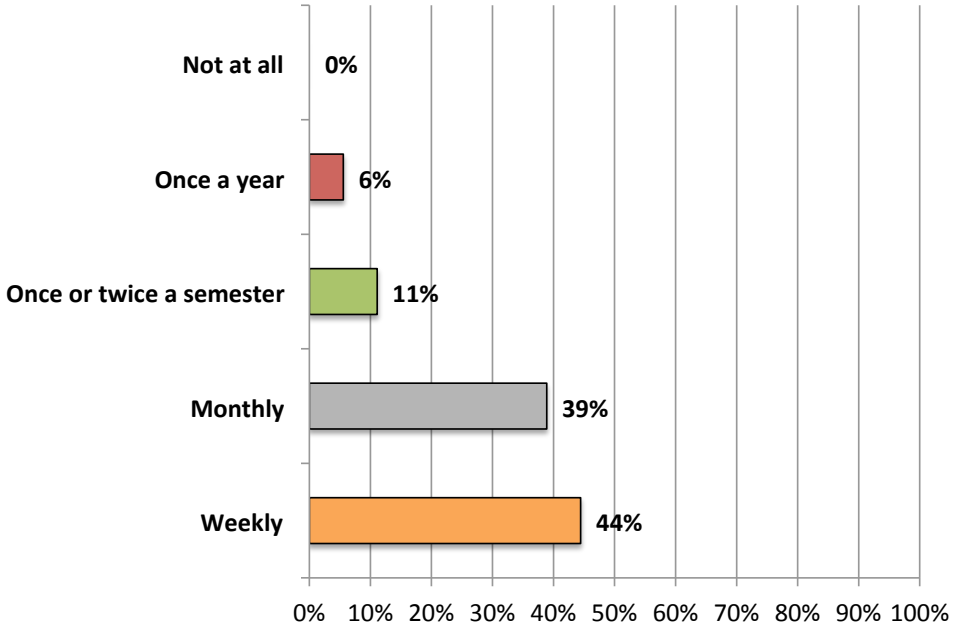


Data collected from Post-Implementation Survey (Q13)
(n= 17)

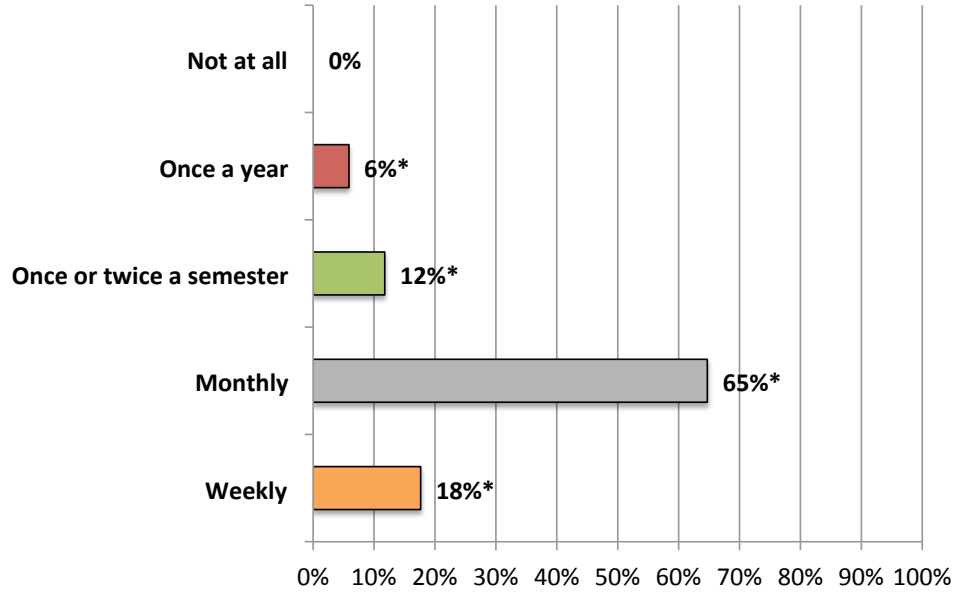


I have required my students to develop and analyze tables, charts and graphs in schoolwork.

Data collected from Pre-Implementation Survey (Q22)
(n= 18)



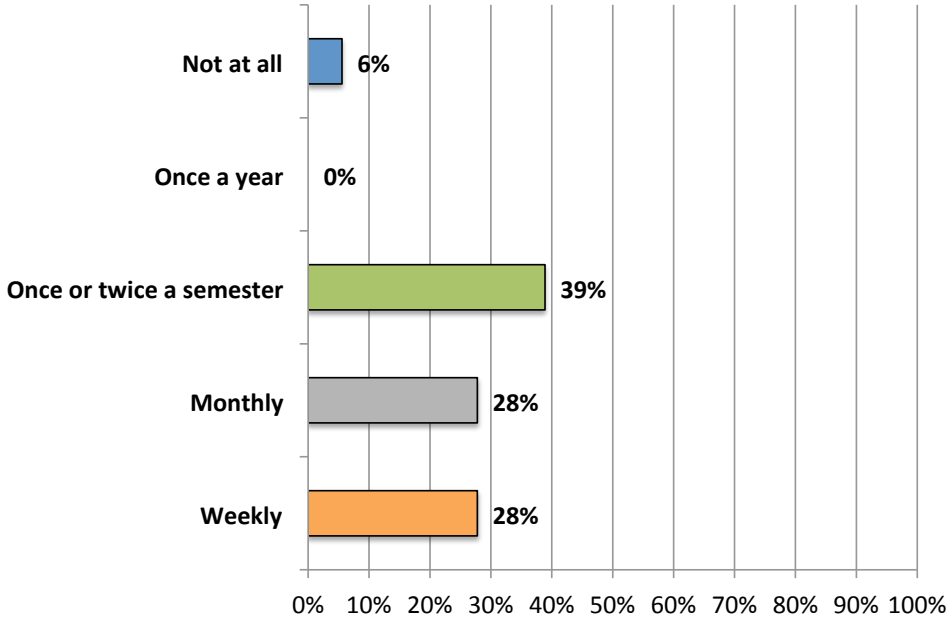
Data collected from Post-Implementation Survey (Q14)
(n= 17)



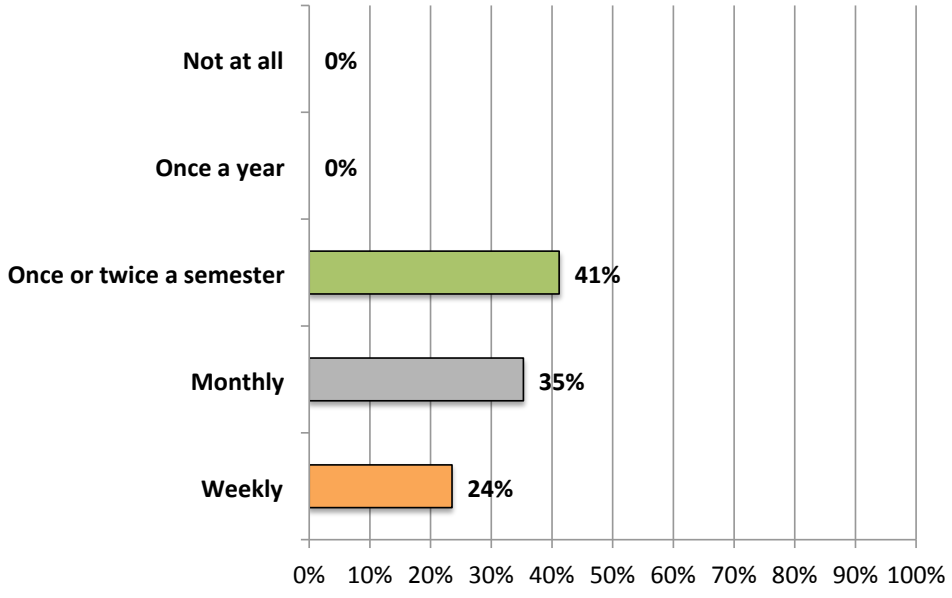
**All data is rounded to the nearest percentage point.*

I have required my students to work on open-ended problems for which there is no immediately obvious method of solution.

Data collected from Pre-Implementation Survey (Q23)
(n= 18)

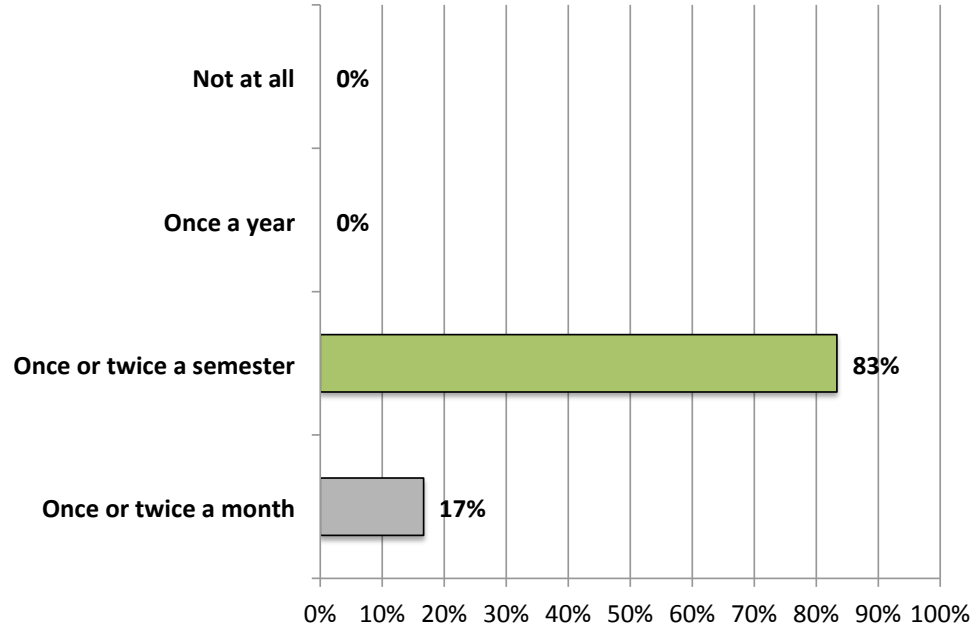


Data collected from Post-Implementation Survey (Q15)
(n= 17)



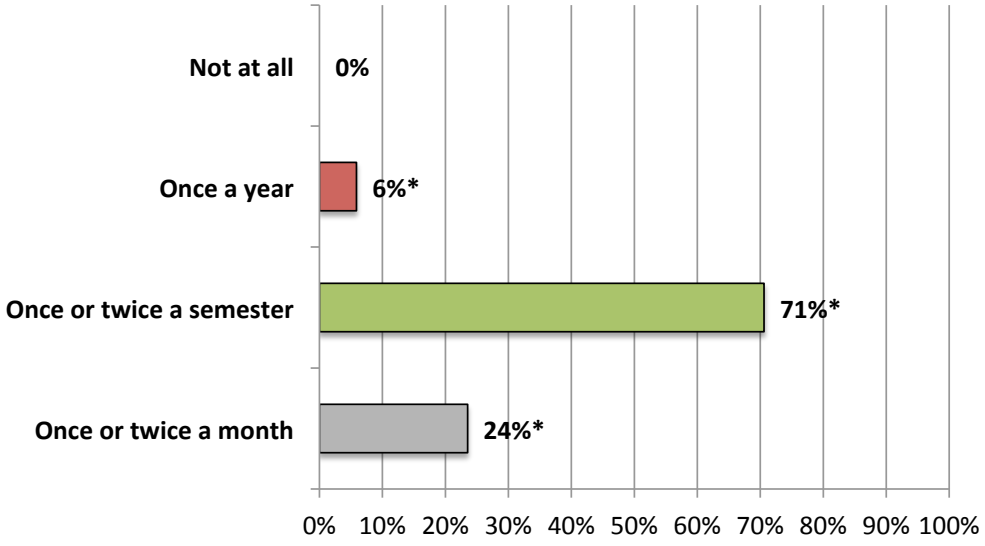
I have required my students to work on an extended, major project that lasts one week or more.

Data collected from Pre-Implementation Survey (Q24)
(n= 18)



...during the 2017-18 school year.

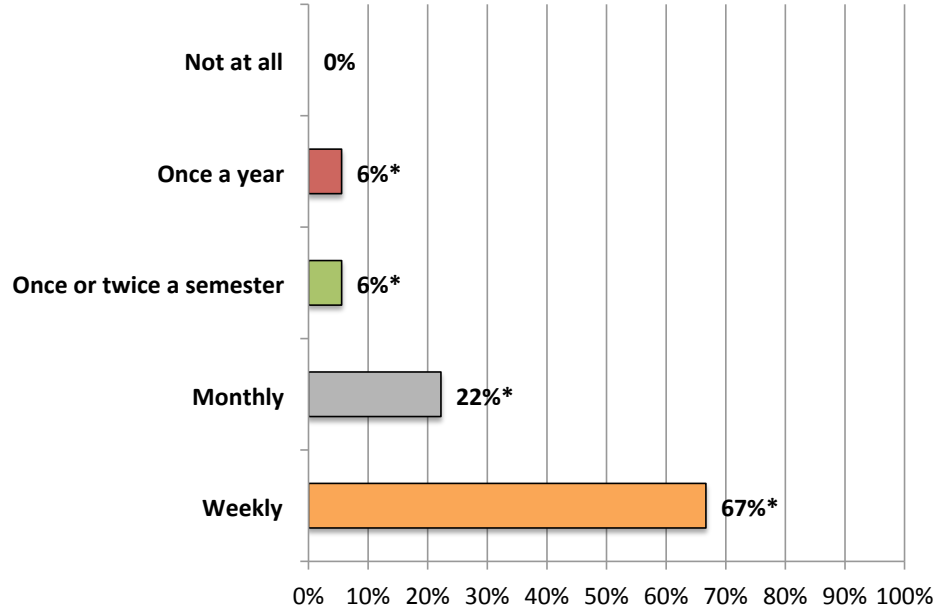
Data collected from Post-Implementation Survey (Q16)
(n= 17)



**All data is rounded to the nearest percentage point.*

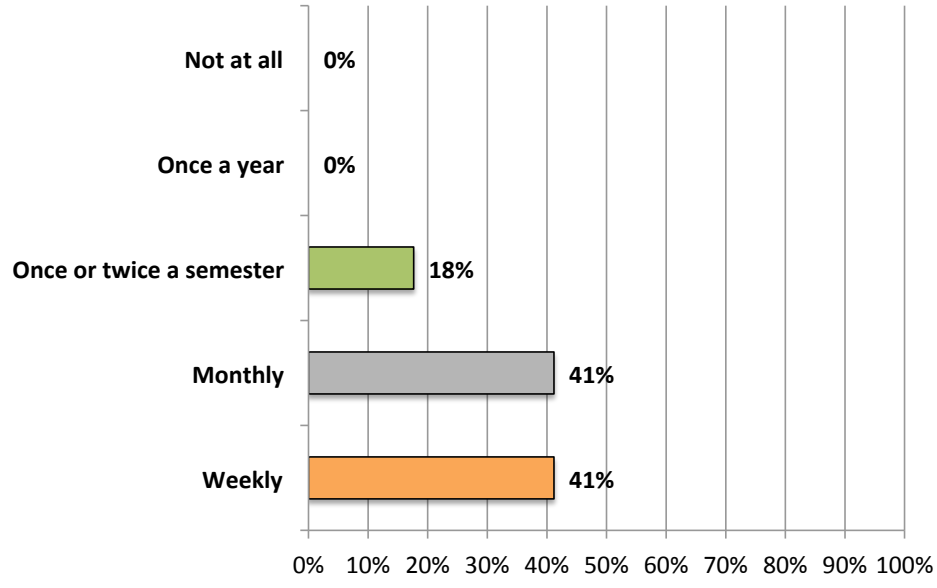
I have required my students to work in cooperative groups to deepen understanding of content.

Data collected from Pre-Implementation Survey (Q25)
(n= 18)



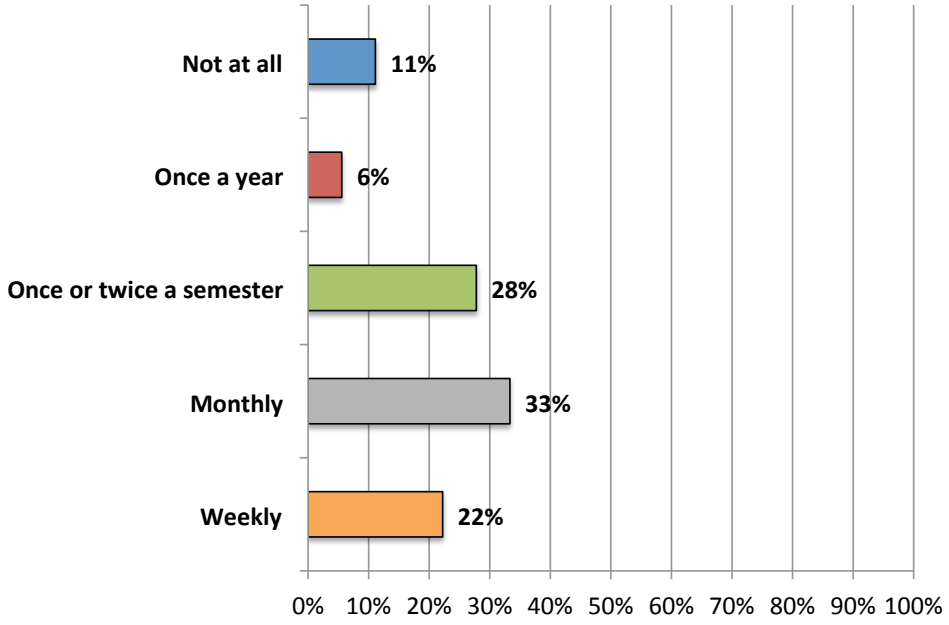
**All data is rounded to the nearest percentage point.*

Data collected from Post-Implementation Survey (Q17)
(n= 17)

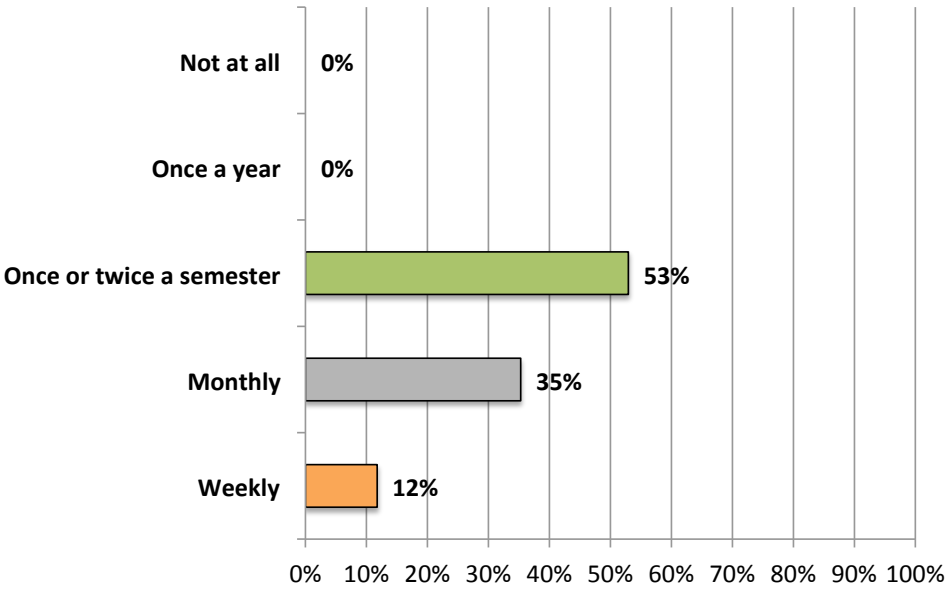


I have required my students to work in groups to complete a written product as a component of a project.

Data collected from Pre-Implementation Survey (Q26)
(n= 18)

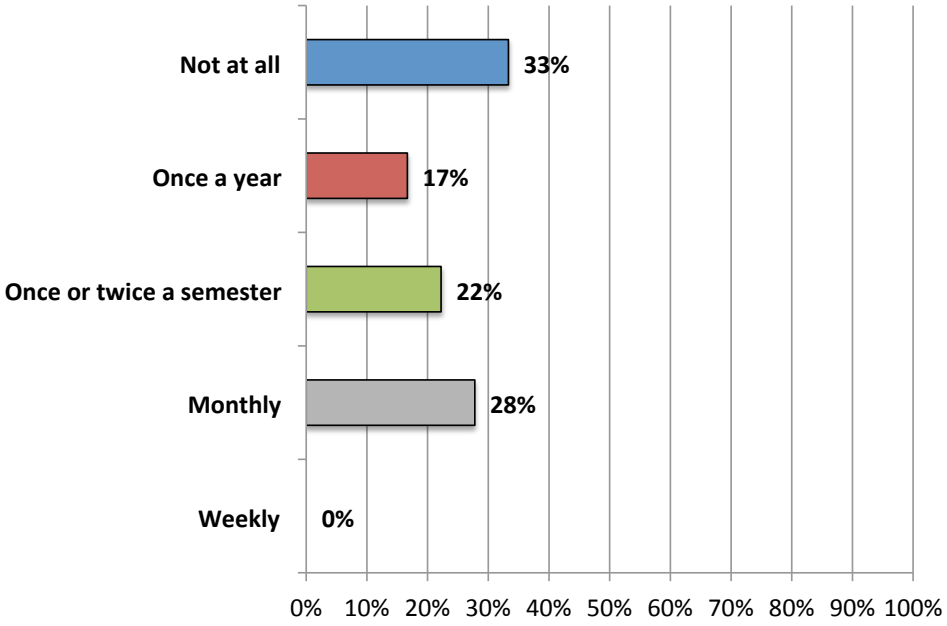


Data collected from Post-Implementation Survey (Q18)
(n= 17)

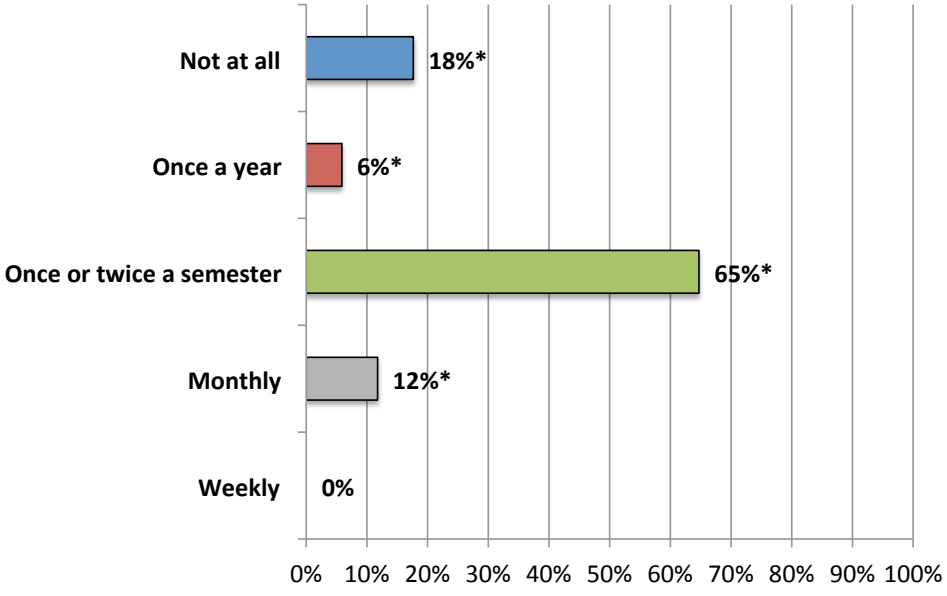


I have required my students to take a test that is predominantly essay questions.

Data collected from Pre-Implementation Survey (Q27)
(n= 18)



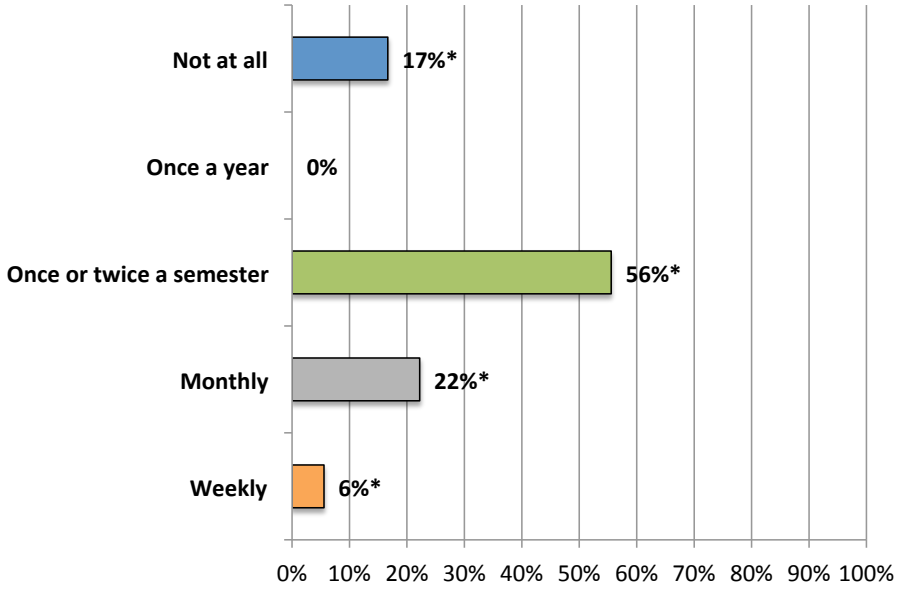
Data collected from Post-Implementation Survey (Q19)
(n= 17)



**All data is rounded to the nearest percentage point.*

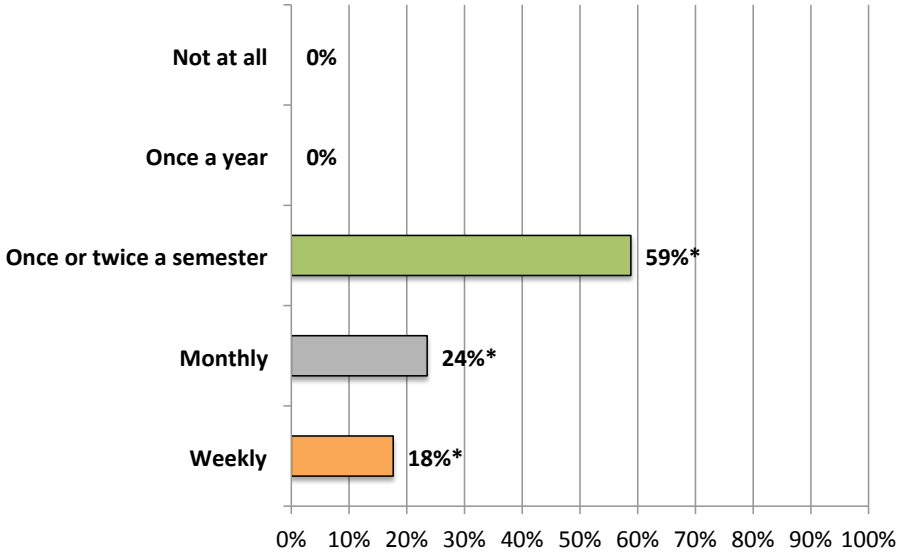
I have required my students to read science related materials (besides textbooks) and show their understanding through writing.

Data collected from Pre-Implementation Survey (Q28)
(n= 18)



**All data is rounded to the nearest percentage point.*

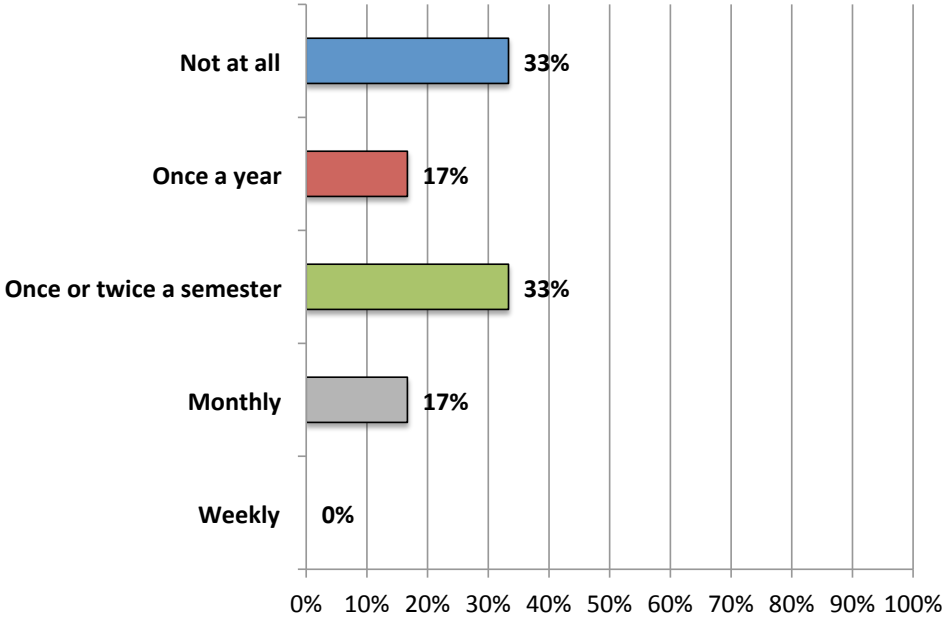
Data collected from Post-Implementation Survey (Q20)
(n= 17)



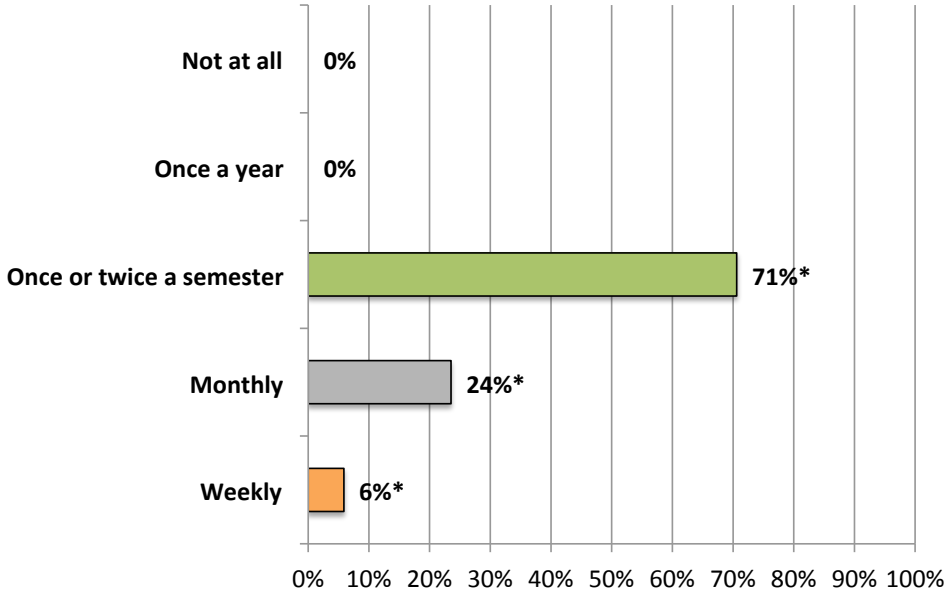
**All data is rounded to the nearest percentage point.*

I have required my students to complete a writing assignment that addresses an authentic (real-life) problem in the community or work setting.

Data collected from Pre-Implementation Survey (Q29)
(n= 18)



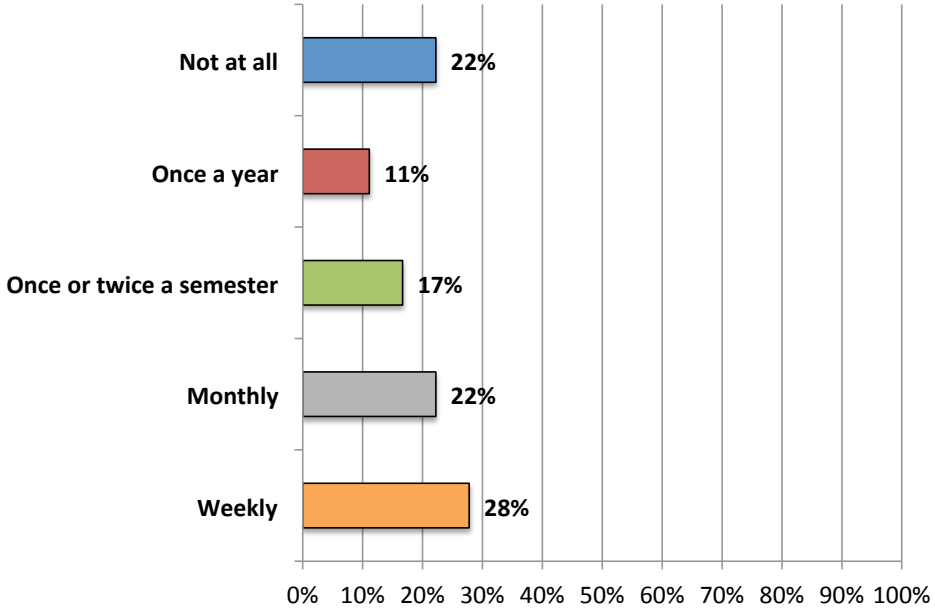
Data collected from Post-Implementation Survey (Q21)
(n= 17)



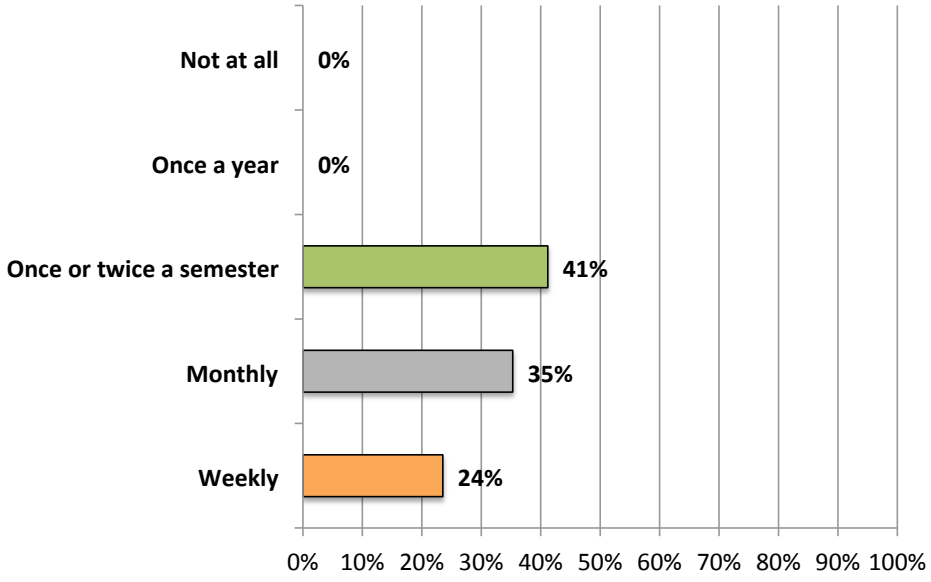
**All data is rounded to the nearest percentage point.*

I have required my students to use science equipment to perform lab activities and use the information (data) collected to complete written assignments in science class.

Data collected from Pre-Implementation Survey (Q30)
(n= 18)

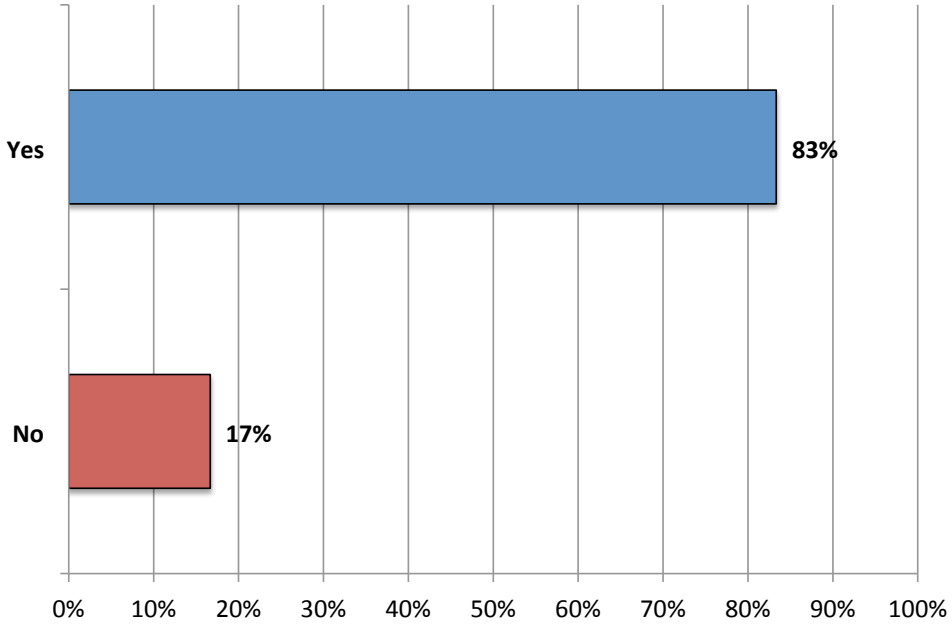


Data collected from Post-Implementation Survey (Q22)
(n= 17)



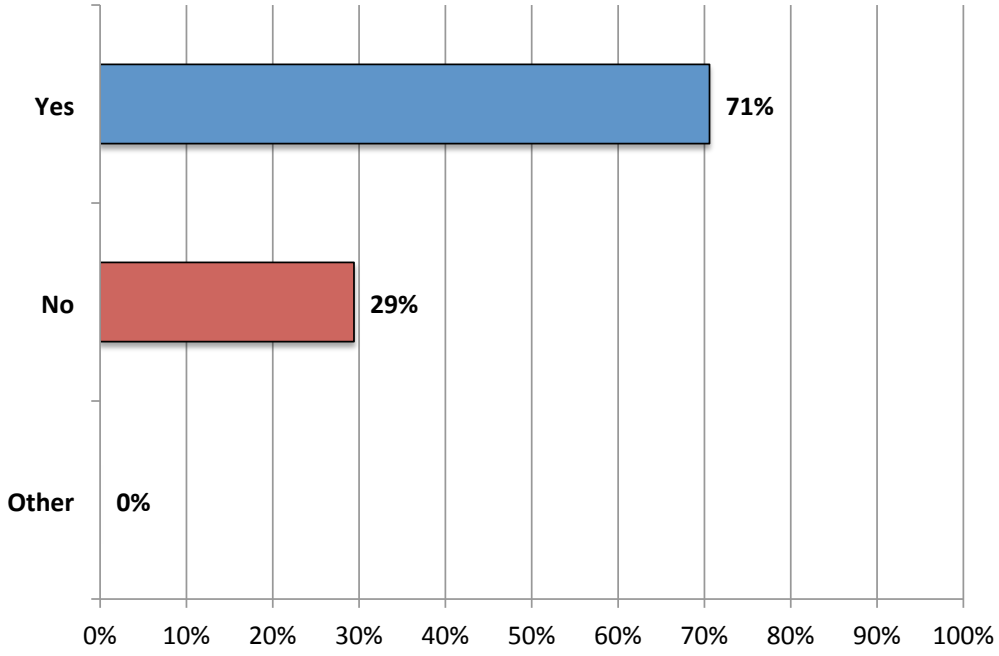
Pre Q31: Do you provide students with a scoring rubric at the beginning of a project to indicate what is required for the student to be scored 'proficient' or above?

Data collected from Pre-Implementation Survey
(n= 18)



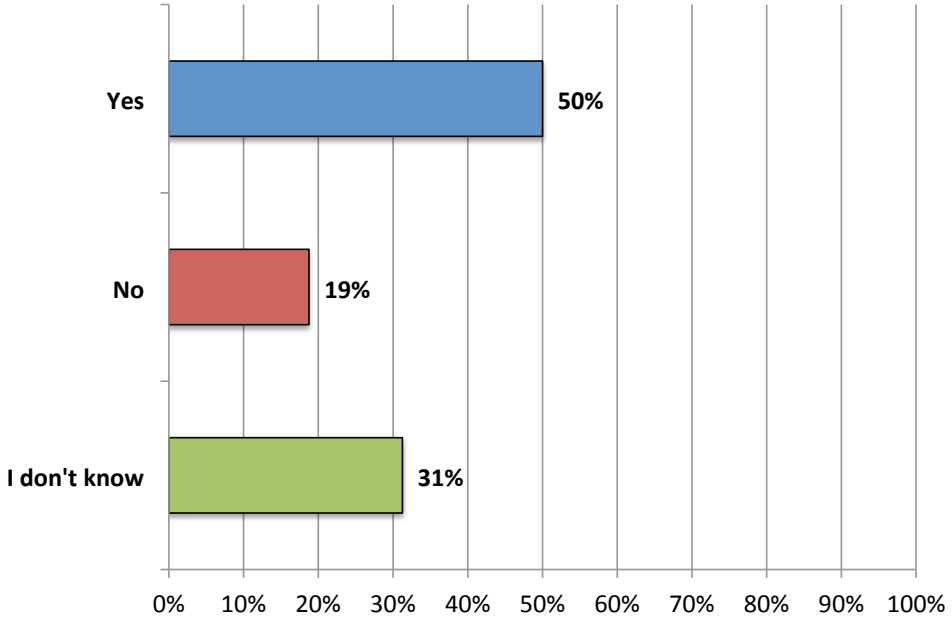
Pre Q32: If yes, do you use this same rubric over time to provide students with feedback on how they are progressing?

Data collected from Pre-Implementation Survey
(n= 17)



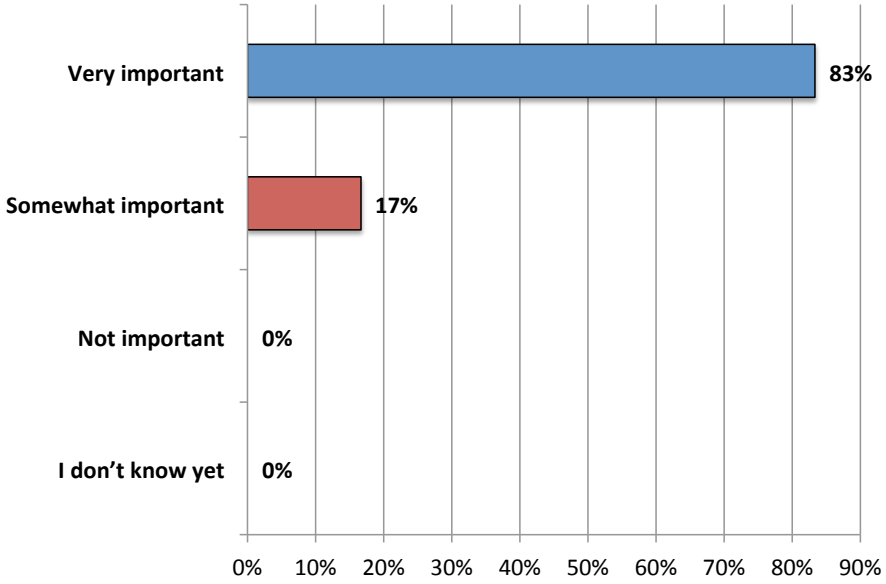
During the 2017-18 year of LDC implementation do you think that your building administrators were provided sufficient information to understand the LDC Science and Literacy Project?

Data collected from Post-Implementation Survey (Q24)
(n= 16)

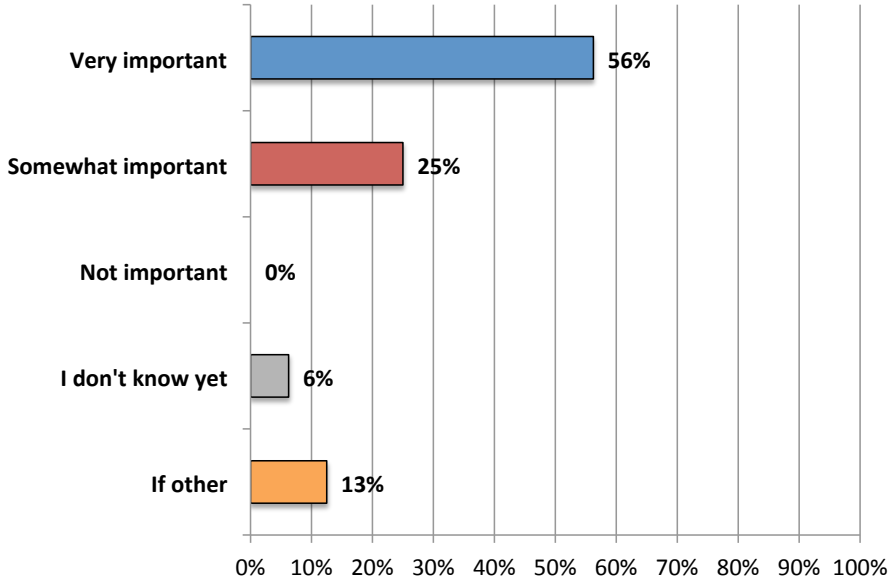


How important is it that your administrators understand the LDC instructional strategies that you will be implementing in your classroom this year?

Data collected from Pre-Implementation Survey (Q33)
(n= 18)



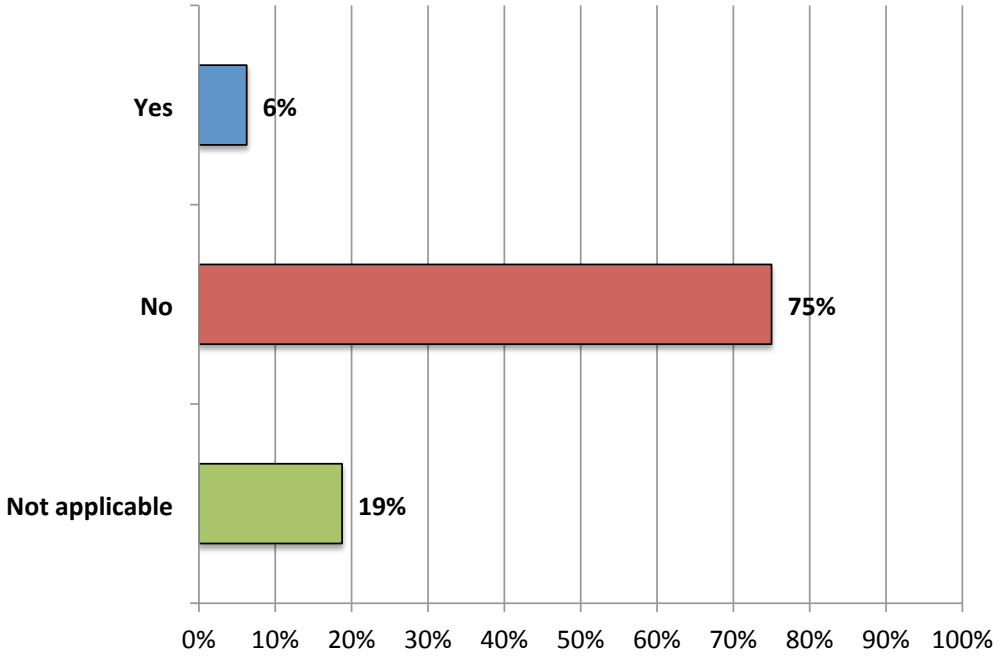
Data collected from Post-Implementation Survey (Q25)
(n= 16)



Note: Respondents were given the option of an "if other" response, which is reflected in the Other category (n=2). One respondent shared that their principal did not inquire about the work, and another respondent shared that they believe it is more important for district administrators to understand the LDC instructional strategies.

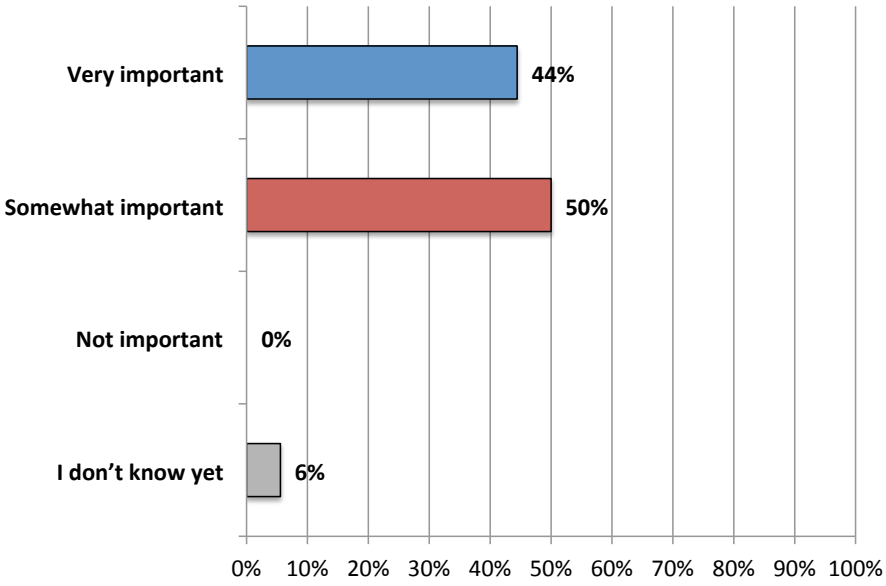
During the 2017-18 year of LDC implementation do you think that parents were provided sufficient information to understand the LDC Science and Literacy Project?

Data collected from Post-Implementation Survey (Q26)
(n= 16)

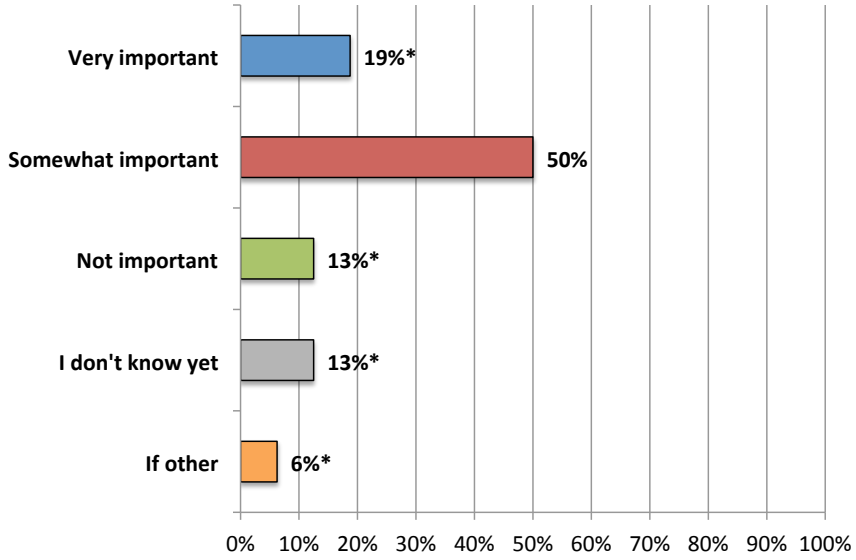


How important is it for parents to know about/understand the LDC model for science literacy and learning?

Data collected from Pre-Implementation Survey (Q34)
(n= 18)



Data collected from Post-Implementation Survey (Q27)
(n= 16)



**All data is rounded to the nearest percentage point.*

Note: Respondents were given the option of an "if other" response, which is reflected in the ***Other*** *category (n=1). One respondent shared it is more crucial for parents of high school students to understand the LDC model for science literacy and learning because students are preparing for college and career.*

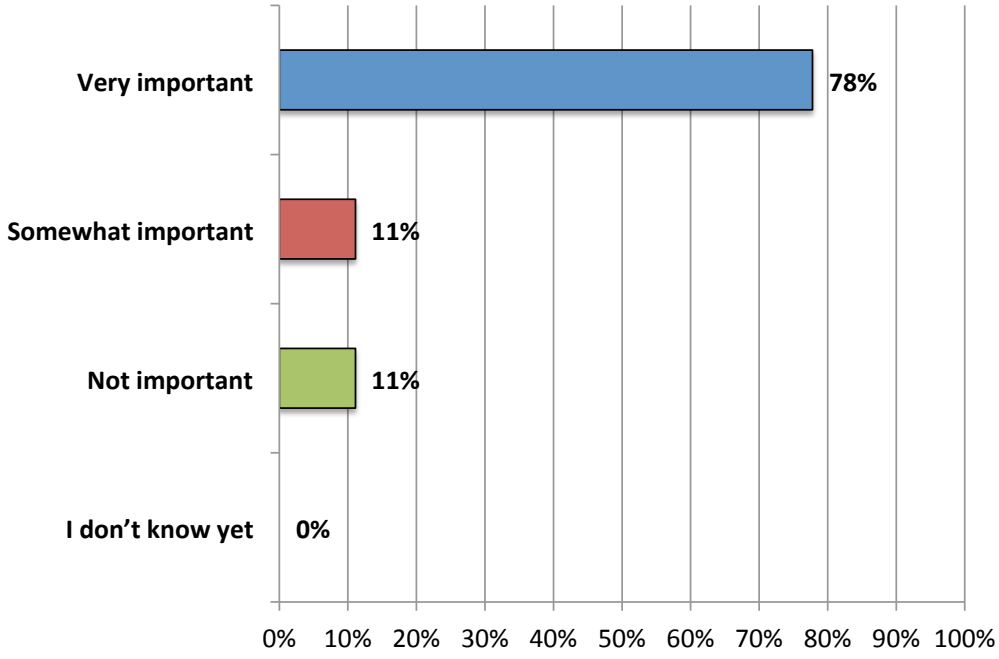
Teachers greatest challenge(s) with implementing LDC modules with their students

Greatest Challenges	Teacher Grade Level		
	ANTICIPATED CHALLENGES (SPR/SUM 2017)	ENCOUNTERED CHALLENGES MODULE 1 (FALL 2017)	ENCOUNTERED CHALLENGES MODULE 2 (SPRING 2018)
	Pre Survey Q35 (n=18 respondents)	Post Survey Q30 (n=16 respondents)	Post Survey Q33 (n=16 respondents)
	MS (n=13)* HS (n=7)*	MS (n=12) HS (n=4)	MS (n=12) HS (n=4)
Time management	MS/HS	MS/HS	MS/HS
Managing content	MS/HS	MS/HS	MS/HS
Understanding how to implement LDC	MS/HS	MS/HS	MS
Collaborating with other teachers	MS/HS		
Managing student expectations	MS	MS/HS	MS
Feeling overwhelmed	HS	MS/HS	HS
Student engagement	MS	MS	MS
Access to resources	MS	MS	MS
Keeping students on task	MS	MS	
Student inexperience with science writing/research	MS		MS
Low student skills		MS	MS
Student accountability	MS		
Using CoreTools		MS	
Differentiation			MS

Pre Survey Q35: What do you anticipate to be your greatest challenge with implementing your LDC module with your students?
Post Survey Q30: What was your greatest challenge with implementing your first LDC module (fall 2017)?
Post Survey Q33: What was your greatest challenge with implementing your second LDC module (spring 2018)?
**Two teachers identified as teaching grade levels 5-12 (MS/HS).*

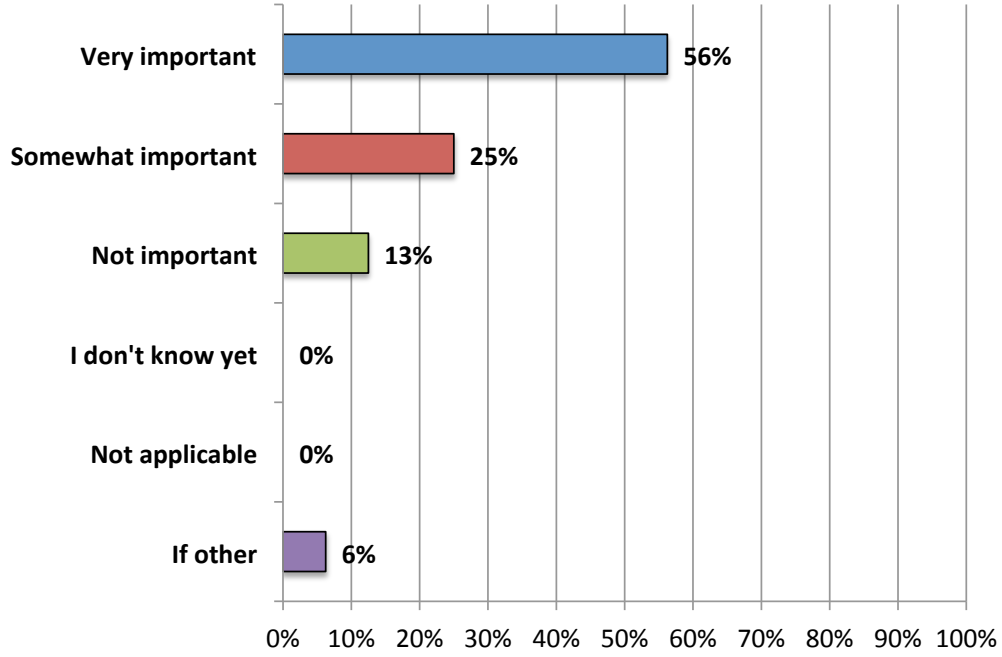
Pre Q36: How important is it to have ongoing access to LDC coaches during implementation of LDC modules in your classroom?

Data collected from Pre-Implementation Survey
(n= 18)



How important was it to you to have ongoing access to LDC training facilitators in your first year of implementation of the LDC Science and Literacy project?

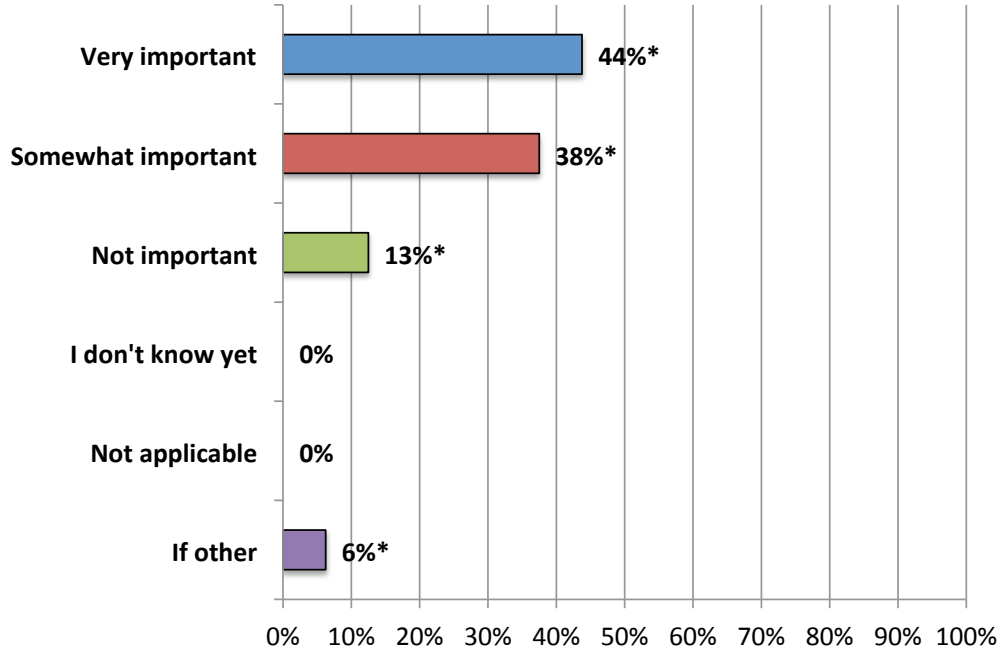
Data collected from Post-Implementation Survey (Q35)
(n= 16)



Note: Respondents were given the option of an "if other" response, which is reflected in the Other category (n=1). One respondent shared it would have been important, ongoing, effective access did not occur.

How important was it to you to have ongoing access to Cohort 1 teachers in your first year of implementation of the LDC Science and Literacy project?

Data collected from Post-Implementation Survey (Q36)
(n= 16)

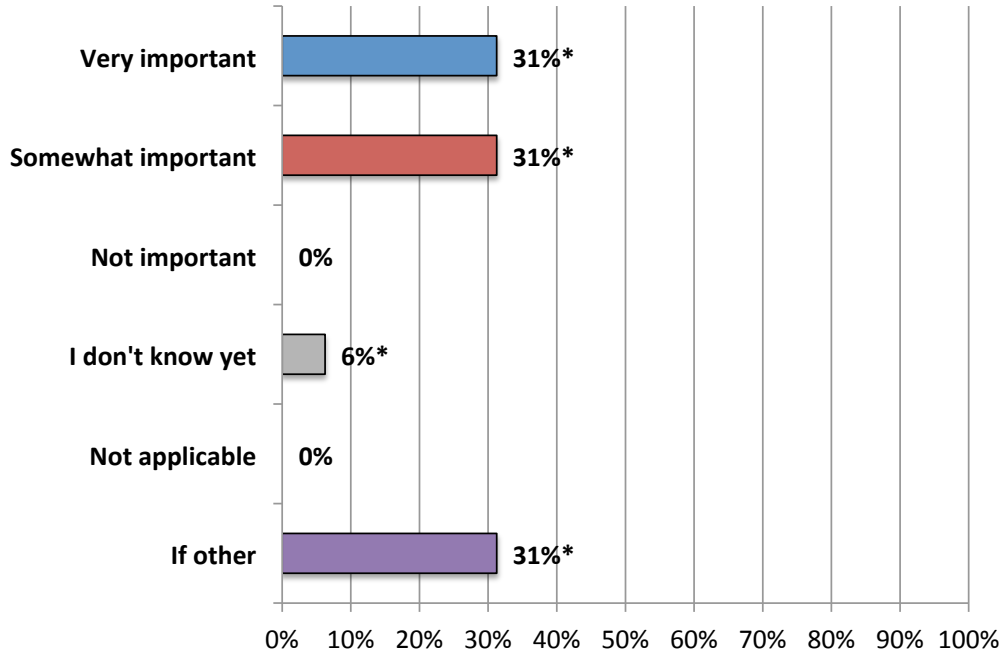


**All data is rounded to the nearest percentage point.*

Note: Respondents were given the option of an "if other" response, which is reflected in the ***Other*** *category (n=1). One respondent noted the helpfulness of the HSTW coaches.*

How important was it for you to have on-site coaching (High Schools that Work, Cohort 1 teachers) in your building during the fall 2017 and spring 2018 to support implementation of LDC modules in your classroom?

Data collected from Post-Implementation Survey (Q37)
(n= 16)

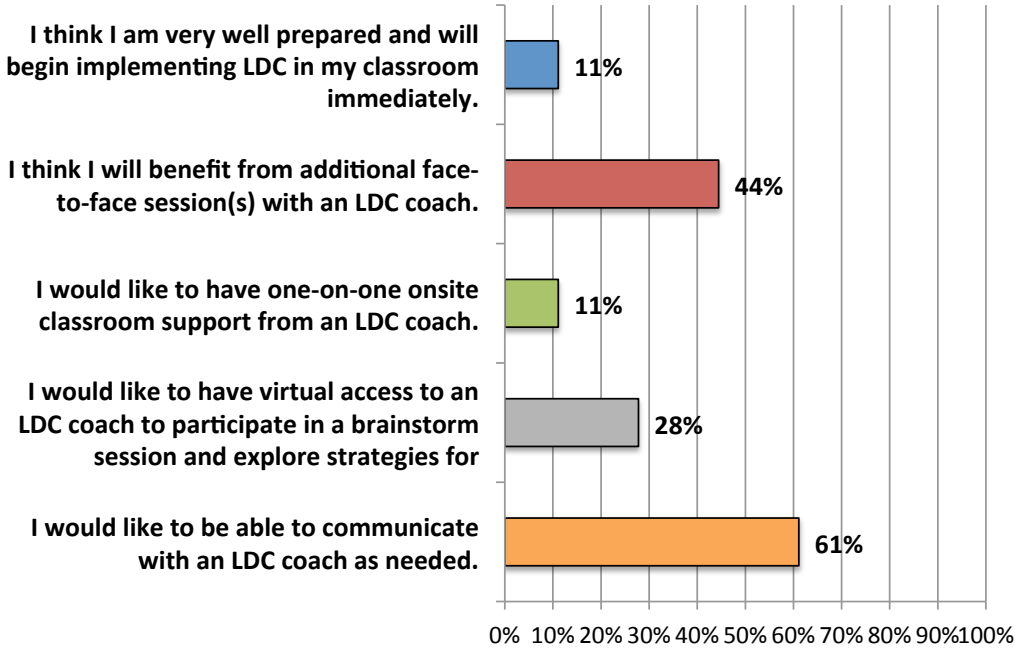


**All data is rounded to the nearest percentage point.*

Note: Respondents were given the option of an "if other" response, which is reflected in the ***Other*** *category (n=5). Three respondents shared there were not any on-site coaches present in their buildings. One respondent noted the helpfulness of HSTW coaches, and another respondent shared that they did not have the time to work with on-site coaches.*

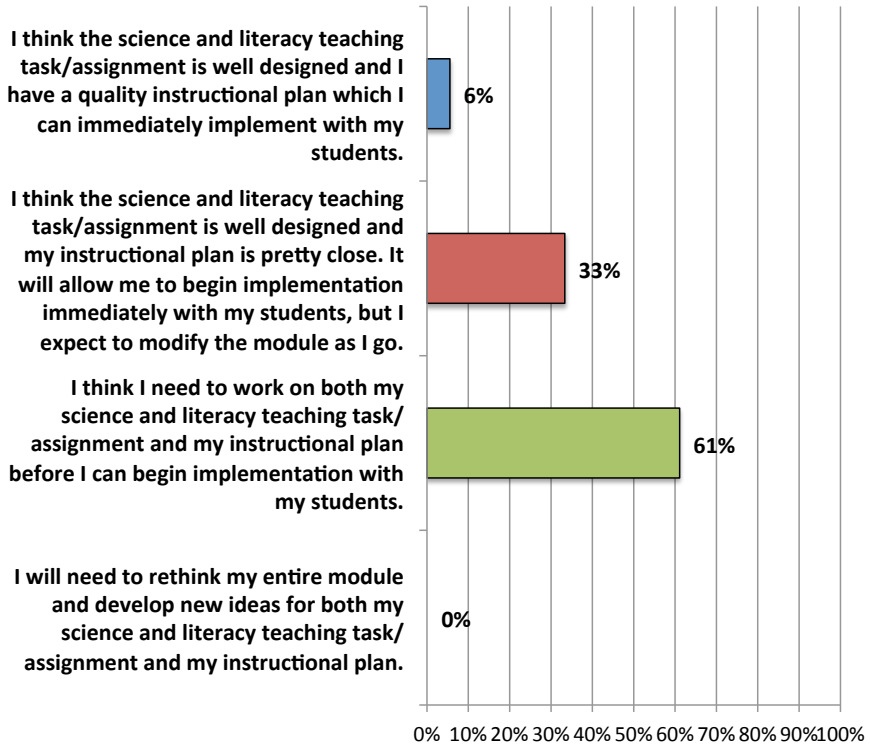
Pre Q37: How well prepared are you to implement your LDC module in your classroom?

Data collected from Pre-Implementation Survey
(n= 18)

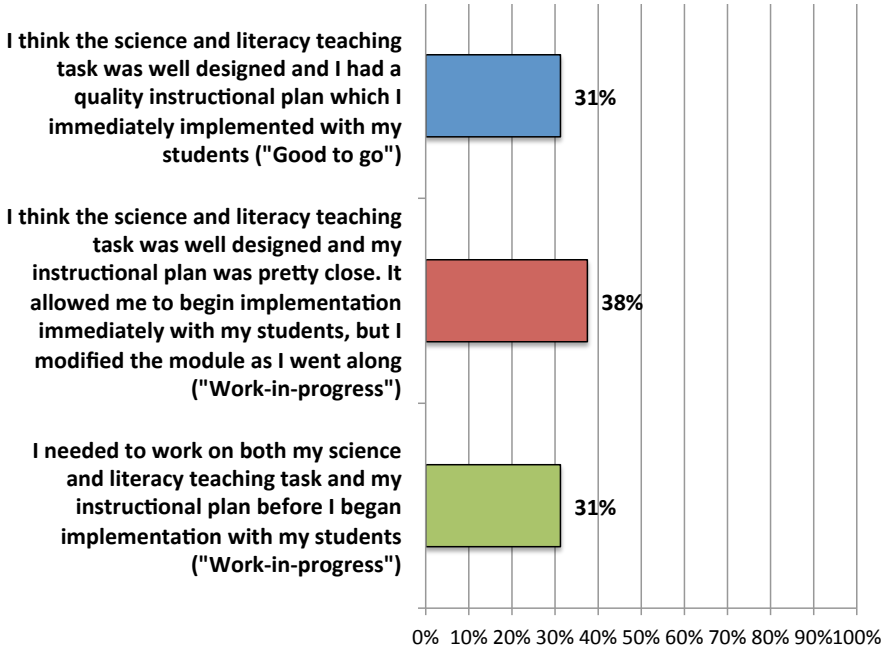


How would you describe your first LDC module (fall 2017)?

Data collected from Pre-Implementation Survey (Q38)
(n= 18)

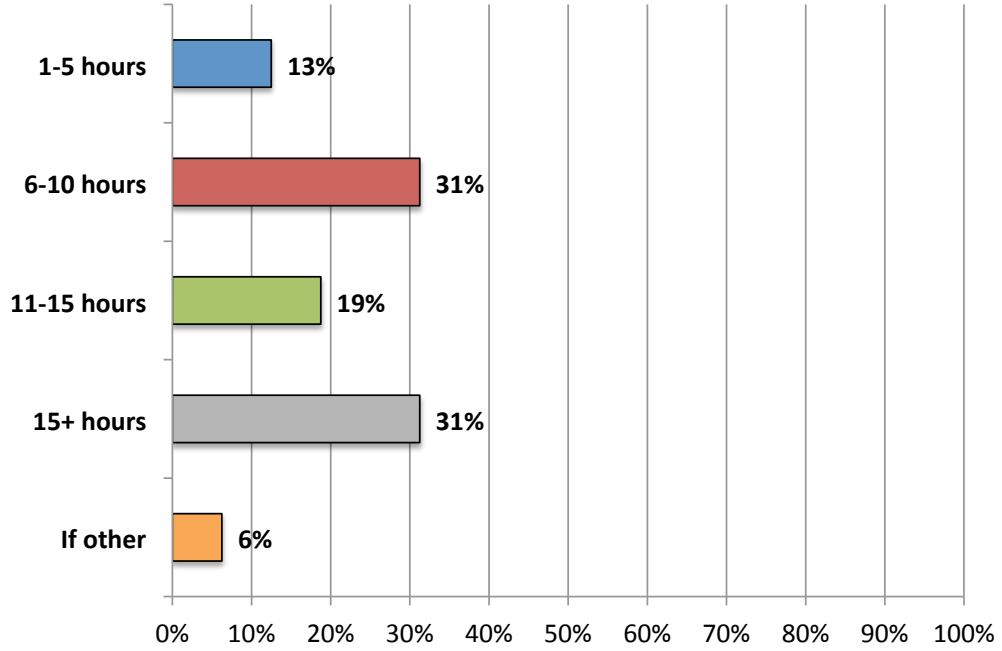


Data collected from Post-Implementation Survey (Q28)
(n= 16)



Beyond the on-site PD days, how many additional hours did you work to prepare for evaluating student work on November 21st (2017)?

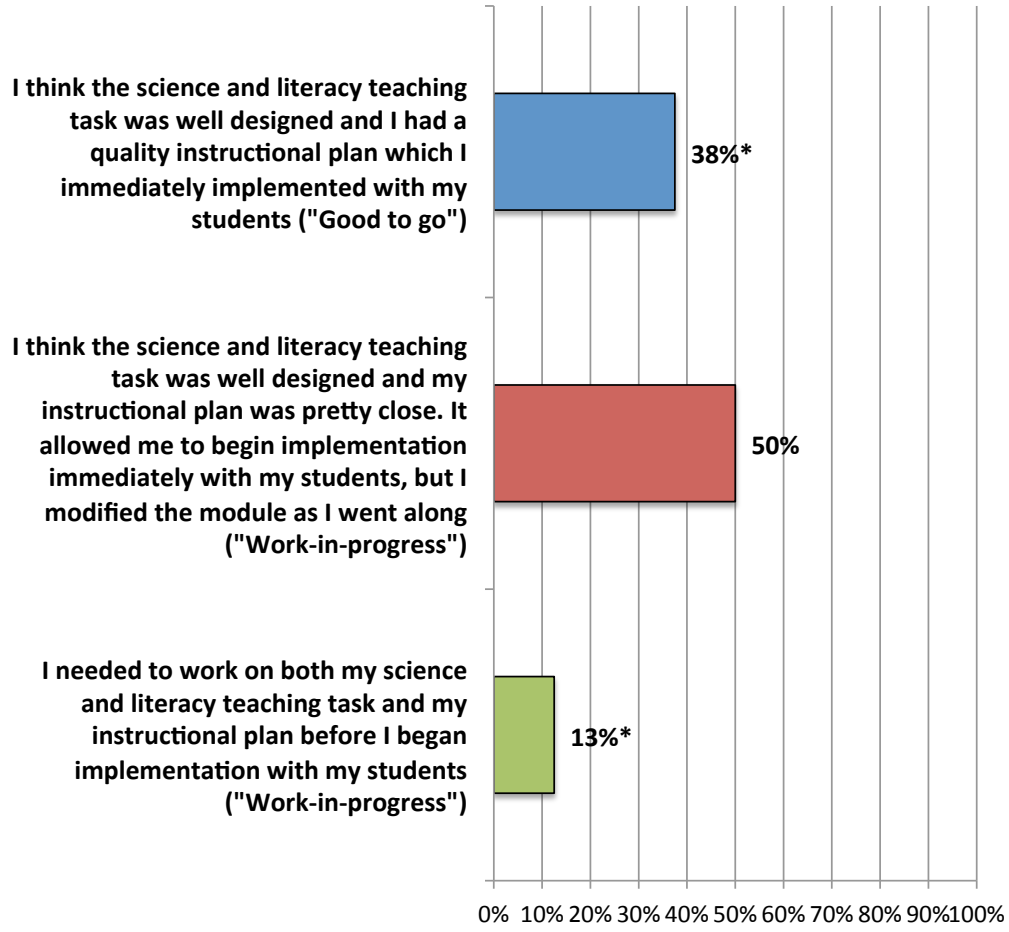
Data collected from Post-Implementation Survey (Q29)
(n= 16)



Note: Respondents were given the option of an "if other" response, which is reflected in the ***Other*** *category (n=1). One respondent shared they prepared for 1-5 hours, but cited a lack of understanding the full scope of LDC module design.*

How would you describe your second LDC module (spring 2018)?

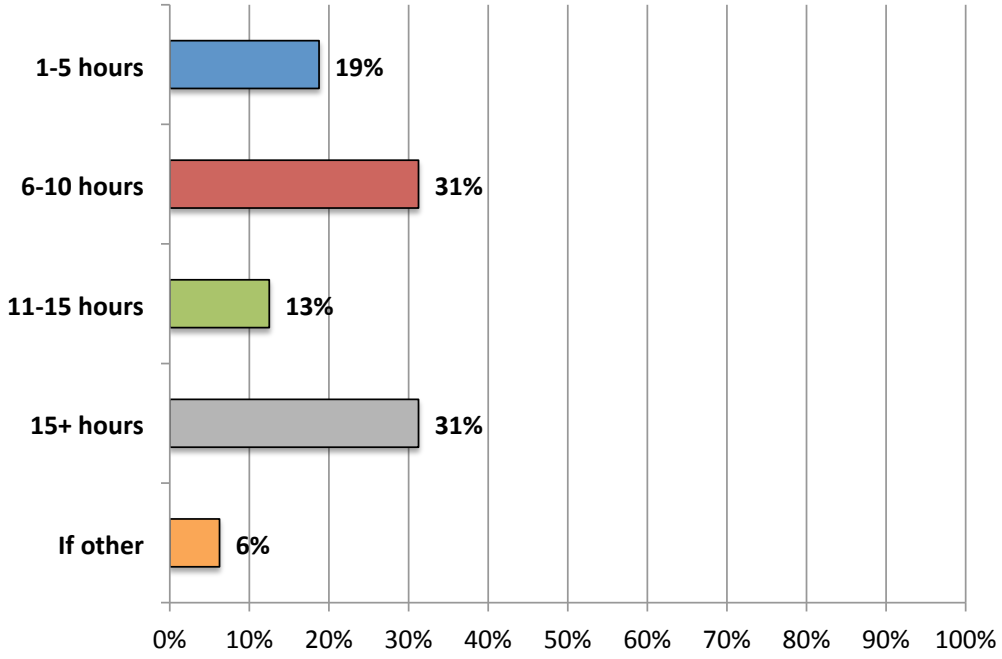
Data collected from Post-Implementation Survey (Q31)
(n= 16)



**All data is rounded to the nearest percentage point.*

Beyond the on-site PD days, how many additional hours did you work to prepare for evaluating student work on March 7th (2018)?

Data collected from Post-Implementation Survey (Q32)
(n= 16)



Note: Respondents were given the option of an "if other" response, which is reflected in the ***Other*** *category (n=1). One respondent shared they prepared for 6-10 hours citing difficulty with evaluating student work.*

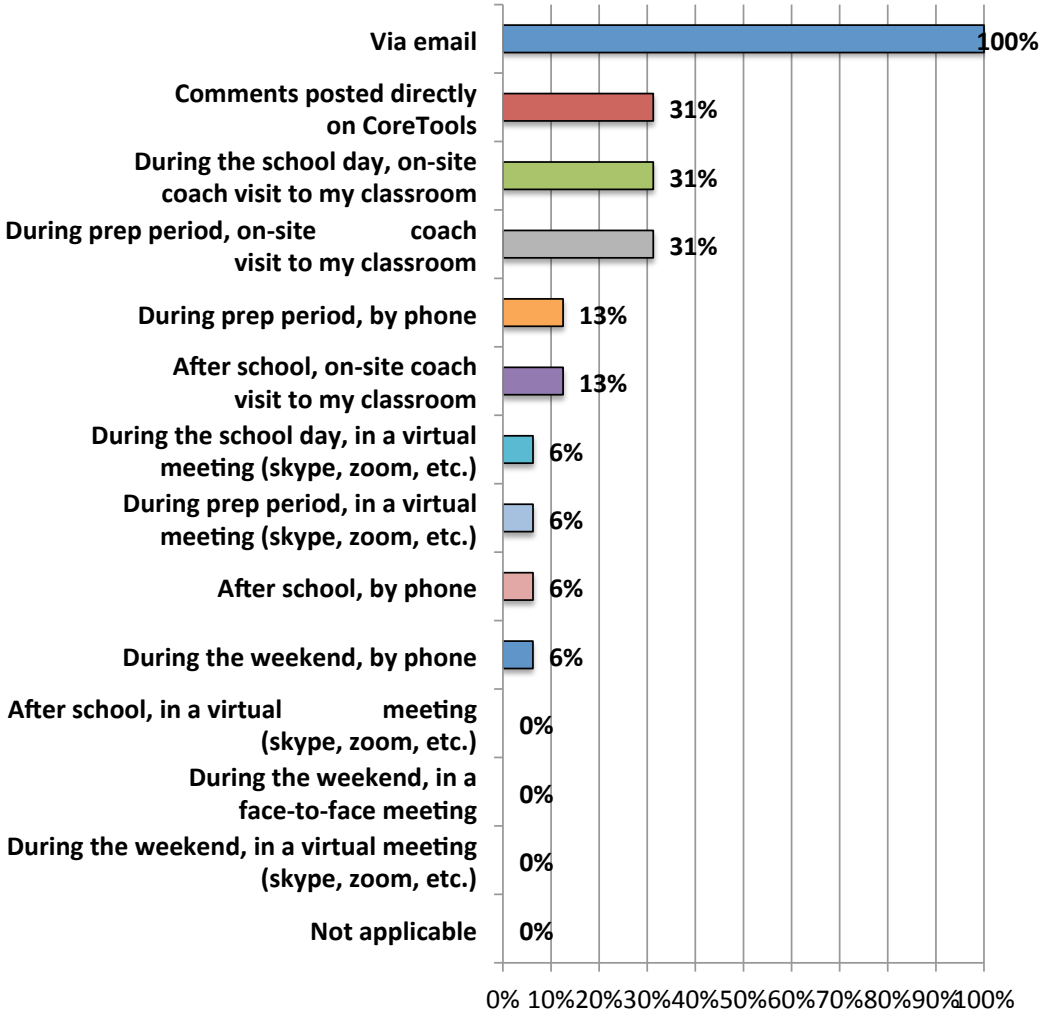
During the 2017-18 year of the LDC Project, what aspect of your experience was the most helpful to you to support LDC module implementation in your classroom? (For example: working with Cohort 1 teachers, using Cohort 1 LDC modules, good support from your administrators, etc.)

Data collected from Post-Implementation Survey (Q34)
(n= 15)

Helpful Aspects	Teacher Grade Level	
	Grades 5-8 (n=12)	Grades 9-12 (n=3)
Access to coaches	✔	✔
Working with Cohort 1 teachers	✔	✔
Professional development sessions	✔	
Collaboration with other LDC teachers	✔	
Having a model	✔	
Access to the LDC library	✔	
Previous work experience	✔	
Administrative support	✔	

Please select the ways you preferred to receive feedback on your LDC modules between PD workshops.

Data collected from Post-Implementation Survey (Q38)
(n= 16)

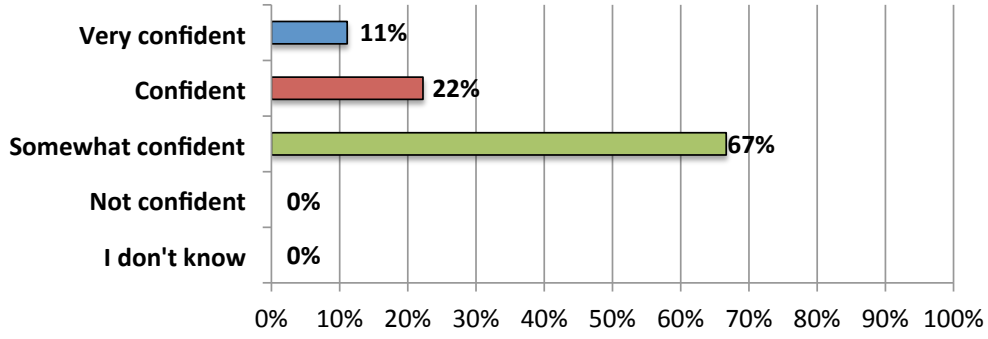


Note: Respondents were given the option of selecting more than one response category if applicable.

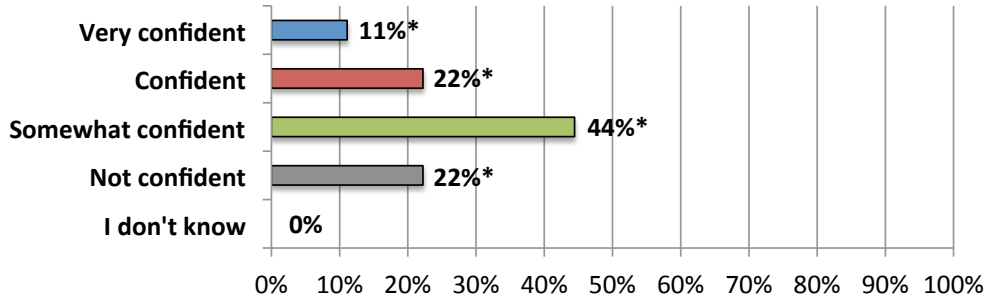
PreQ39: How confident are you about the following aspects of implementing your LDC module?

Data collected from Pre-Implementation Survey
(n= 18)

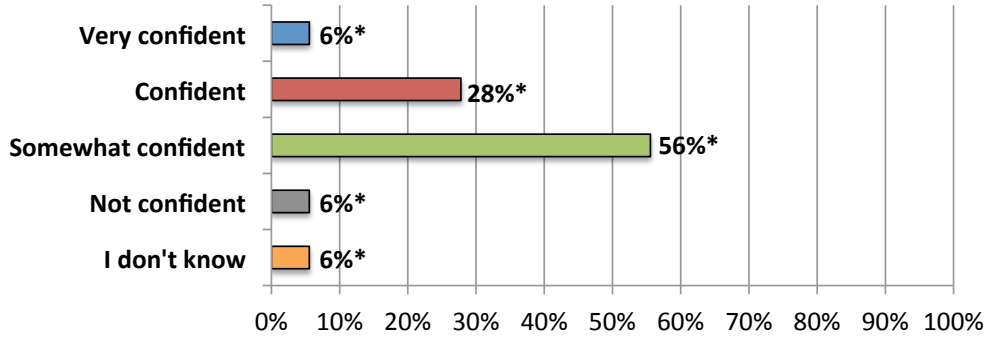
Find time to revise/complete my LDC module (n=18)



Find time during classroom instruction with students to implement the LDC module (n=18)



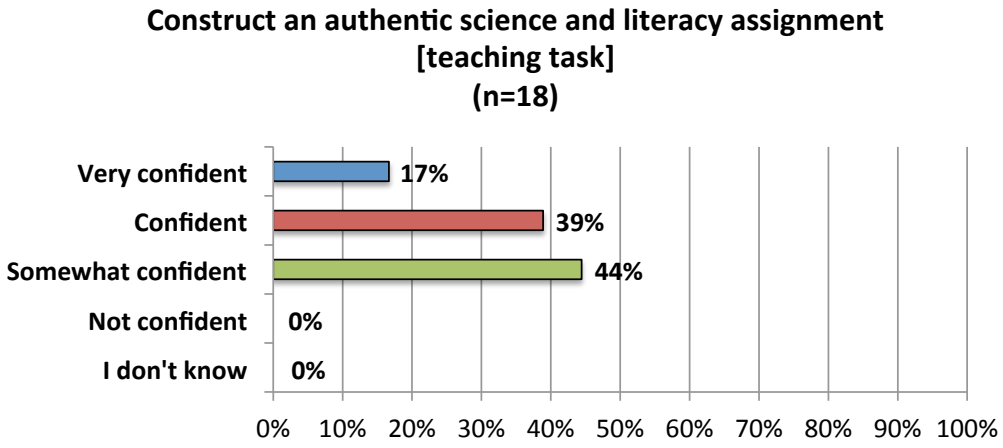
Find time to work with LDC coaches (n=18)



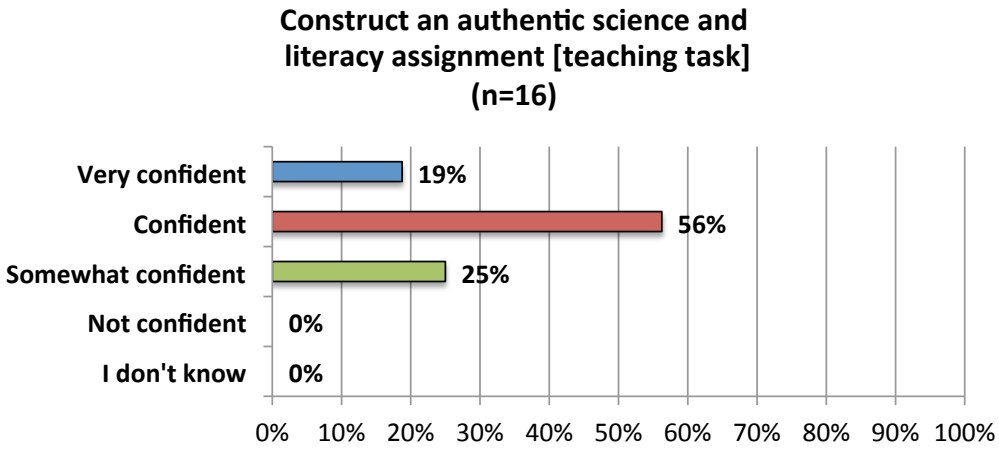
**All data is rounded to the nearest percentage point.*

How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

Data collected from Pre-Implementation Survey (Q40)

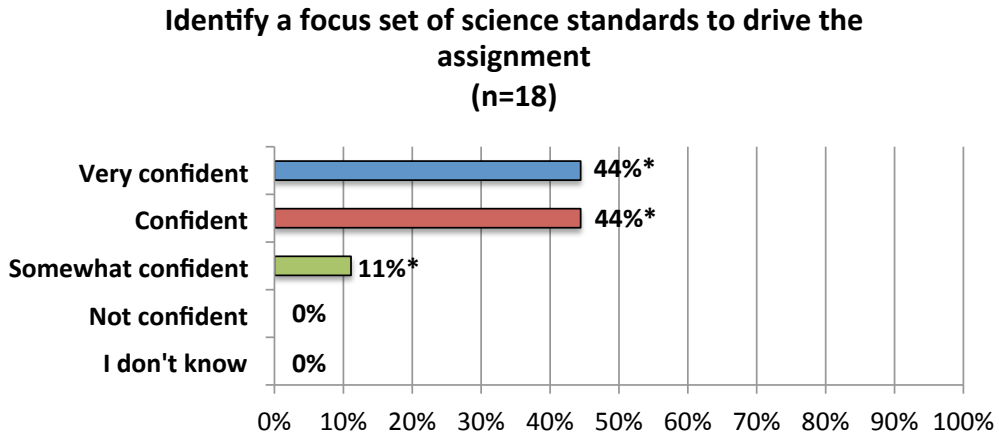


Data collected from Post-Implementation Survey (Q39)

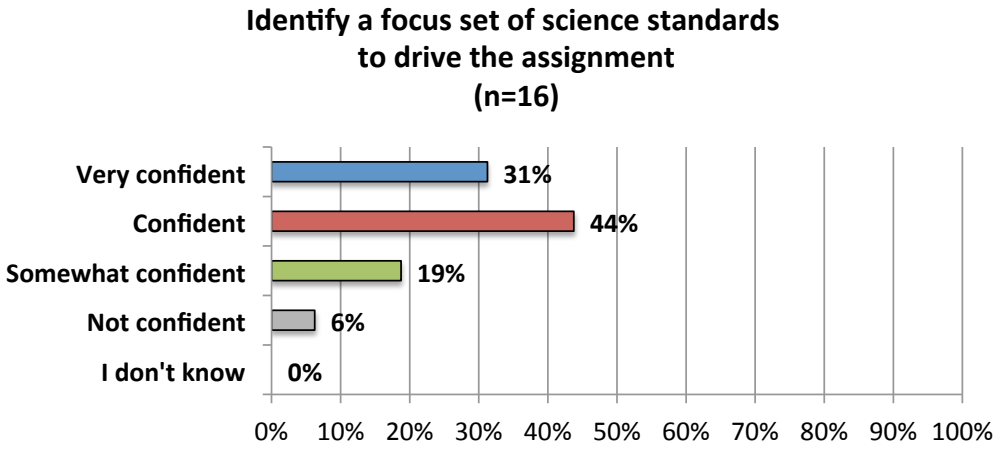


(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

Data collected from Pre-Implementation Survey (Q40)



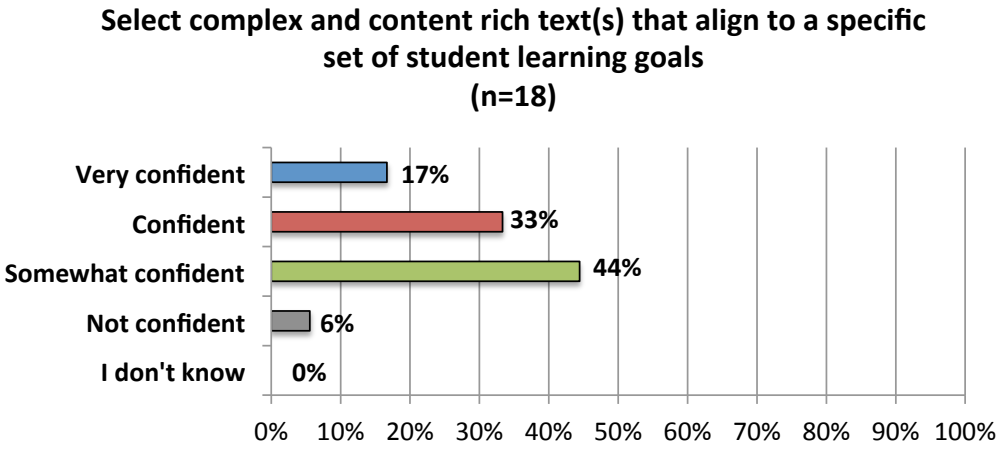
Data collected from Post-Implementation Survey (Q39)



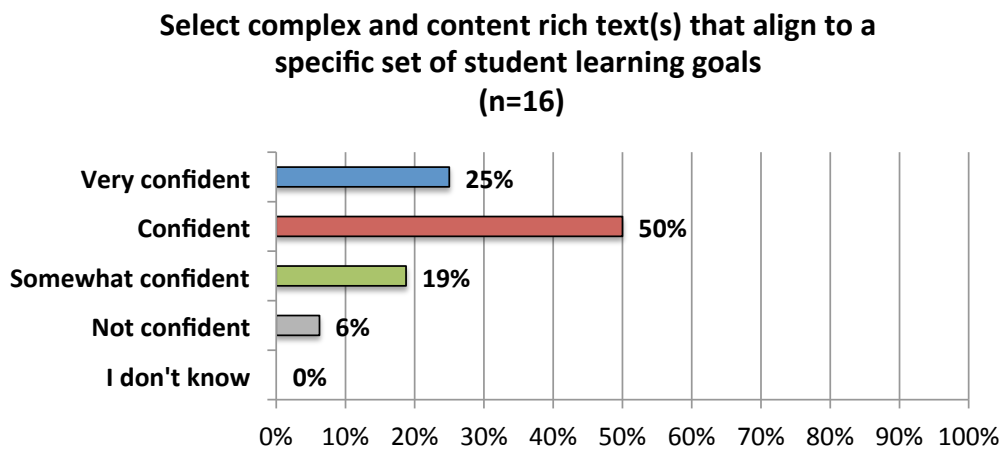
**All data is rounded to the nearest percentage point.*

(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

Data collected from Pre-Implementation Survey (Q40)

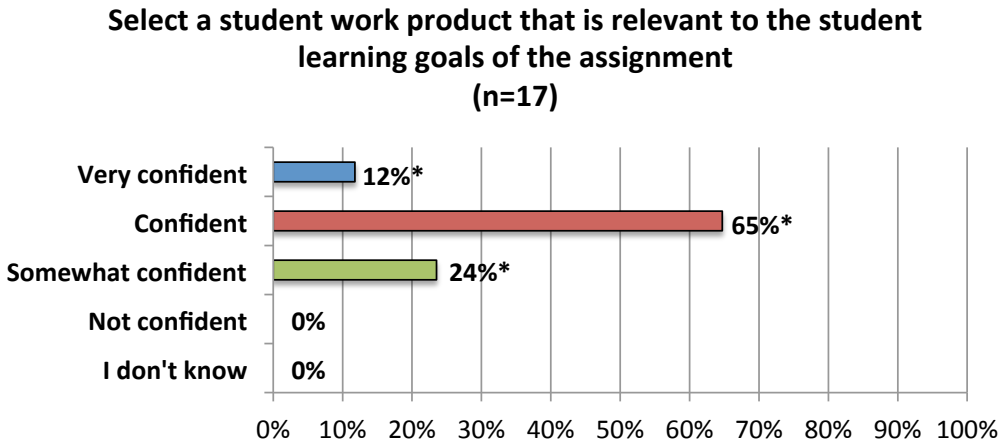


Data collected from Post-Implementation Survey (Q39)

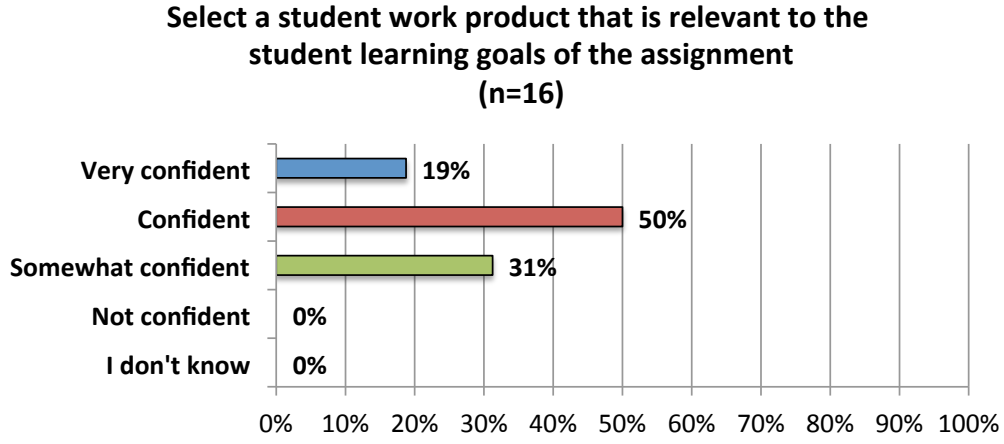


(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

Data collected from Pre-Implementation Survey (Q40)



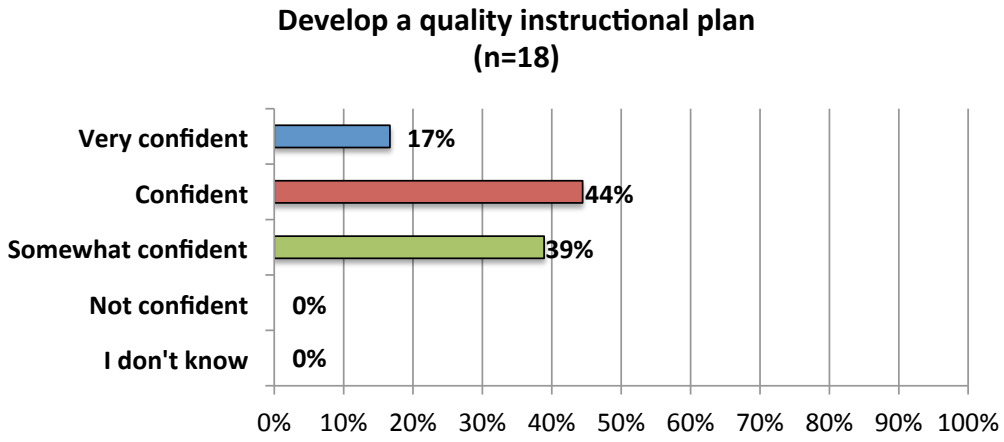
Data collected from Post-Implementation Survey (Q39)



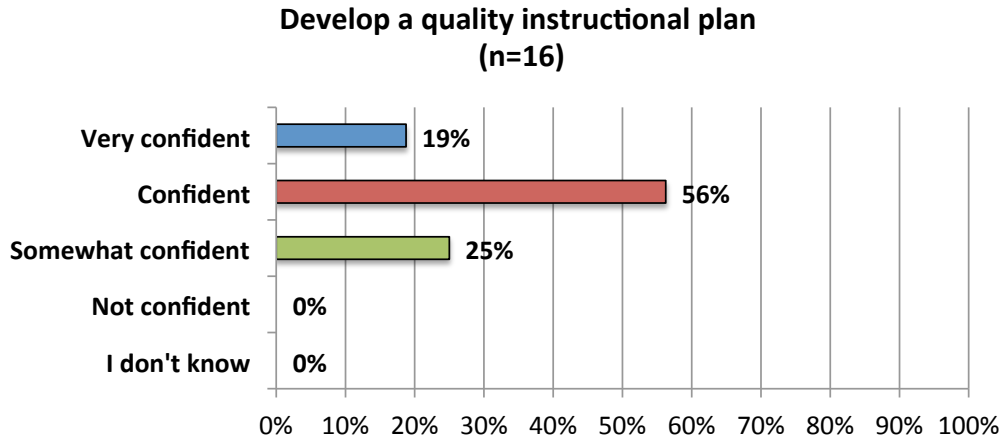
**All data is rounded to the nearest percentage point.*

(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

Data collected from Pre-Implementation Survey (Q40)

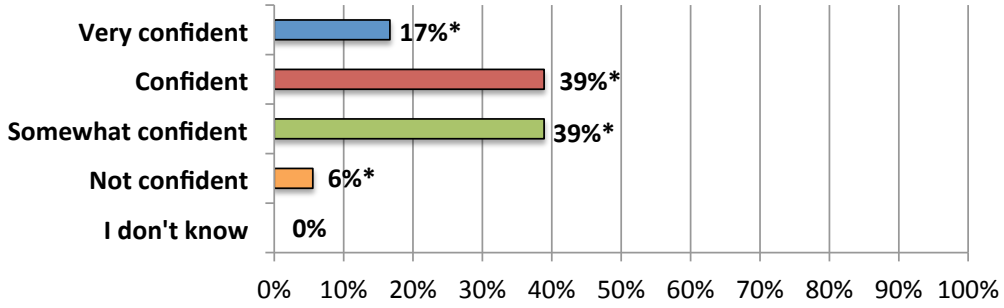


Data collected from Post-Implementation Survey (Q39)

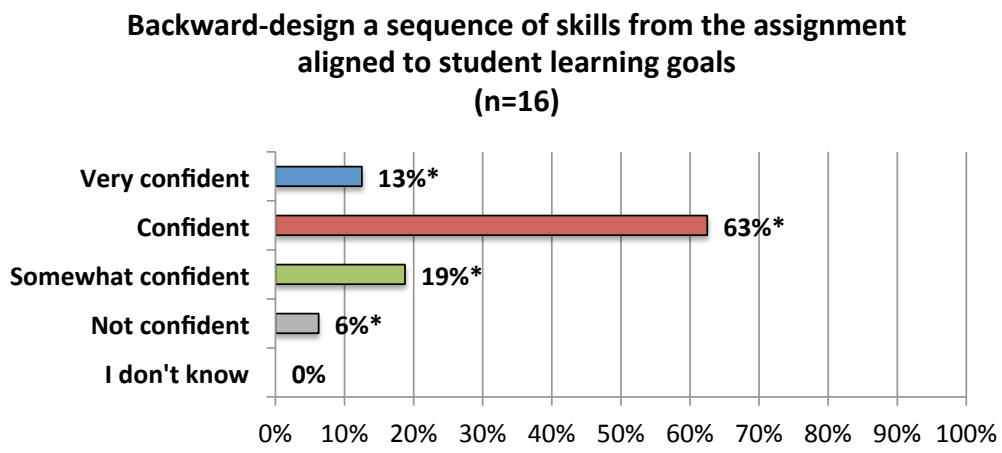


(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

Data collected from Pre-Implementation Survey (Q40)



Data collected from Post-Implementation Survey (Q39)

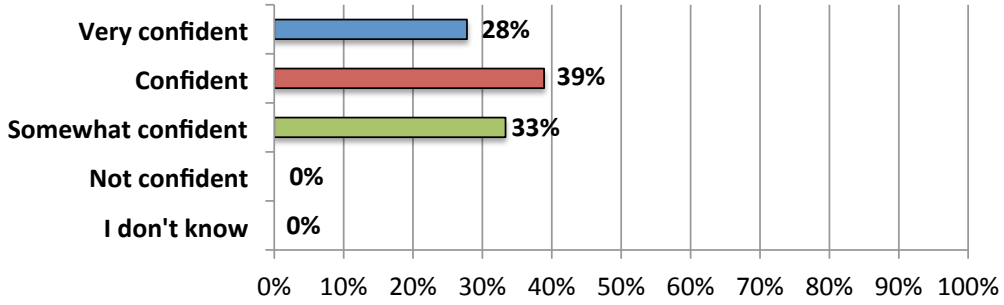


**All data is rounded to the nearest percentage point.*

(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

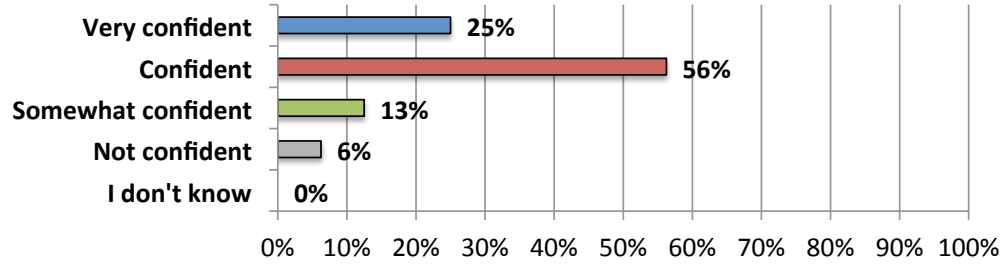
Data collected from Pre-Implementation Survey (Q40)

Develop instruction that allows students to demonstrate the skills needed to meet the expectations of the assignment (n=18)



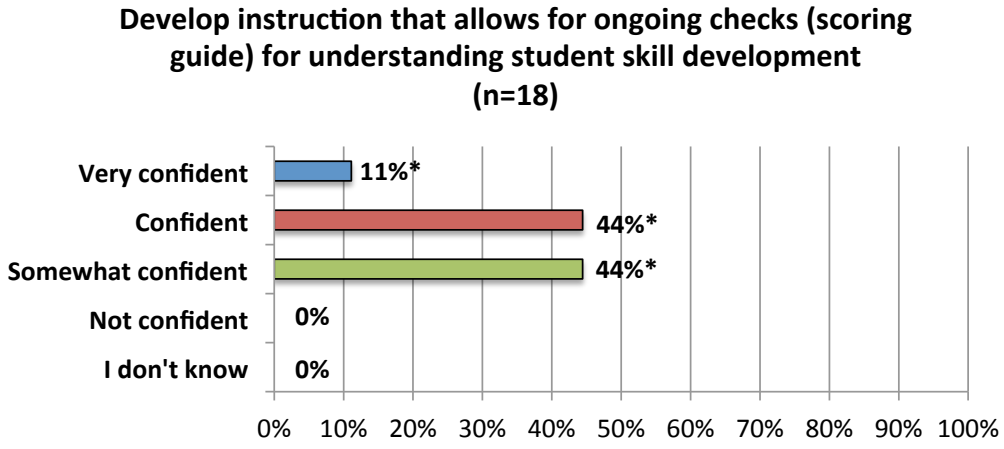
Data collected from Post-Implementation Survey (Q39)

Develop instruction that allows students to demonstrate the skills needed to meet the expectations of the assignment (n=16)

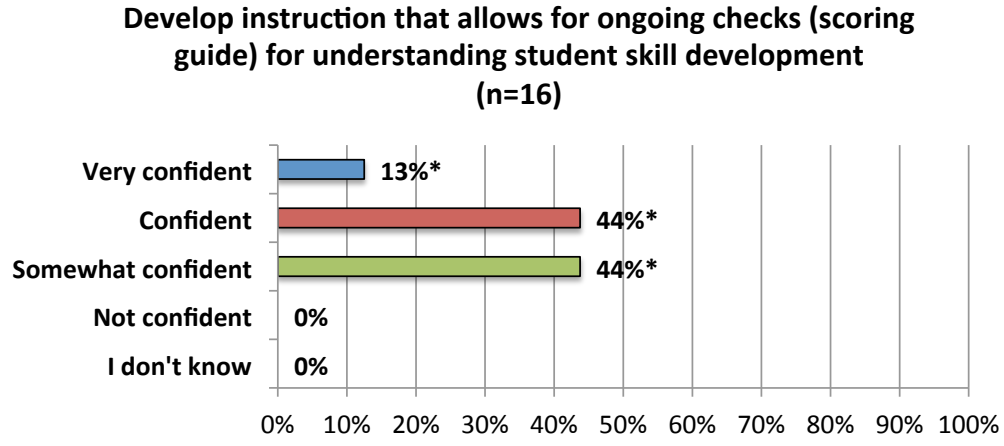


(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

Data collected from Pre-Implementation Survey (Q40)



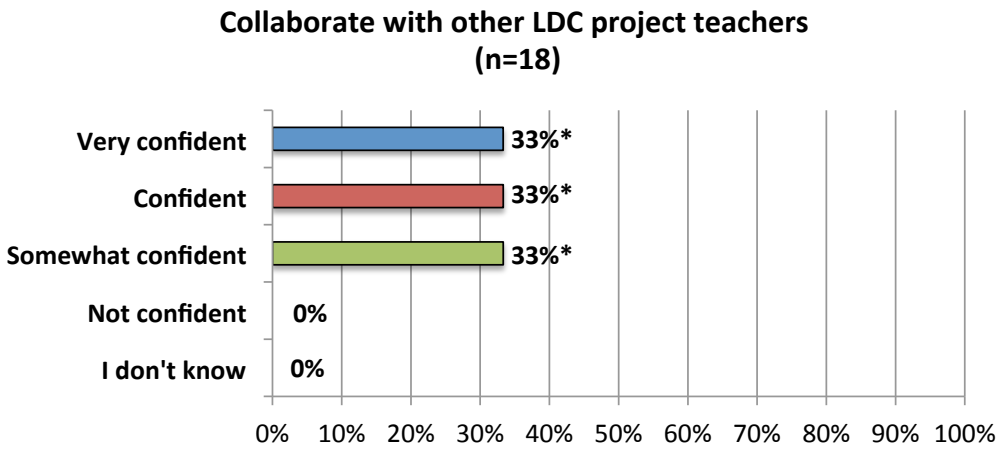
Data collected from Post-Implementation Survey (Q39)



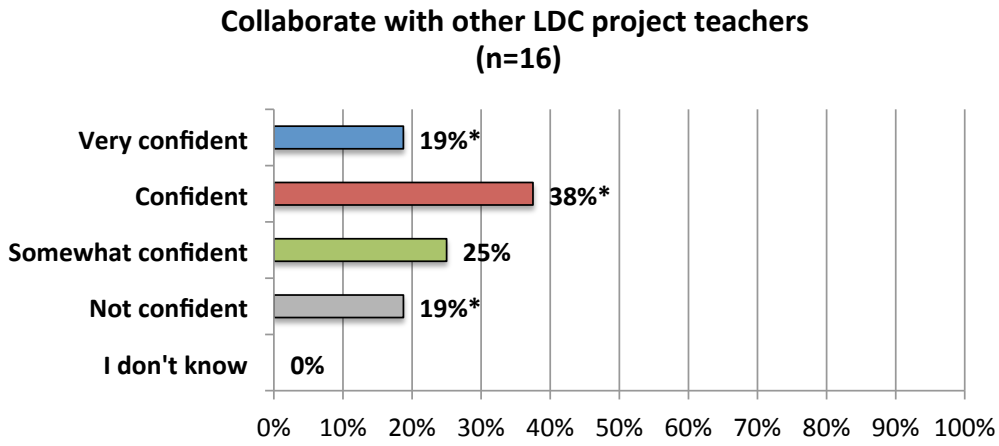
**All data is rounded to the nearest percentage point.*

(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

Data collected from Pre-Implementation Survey (Q40)



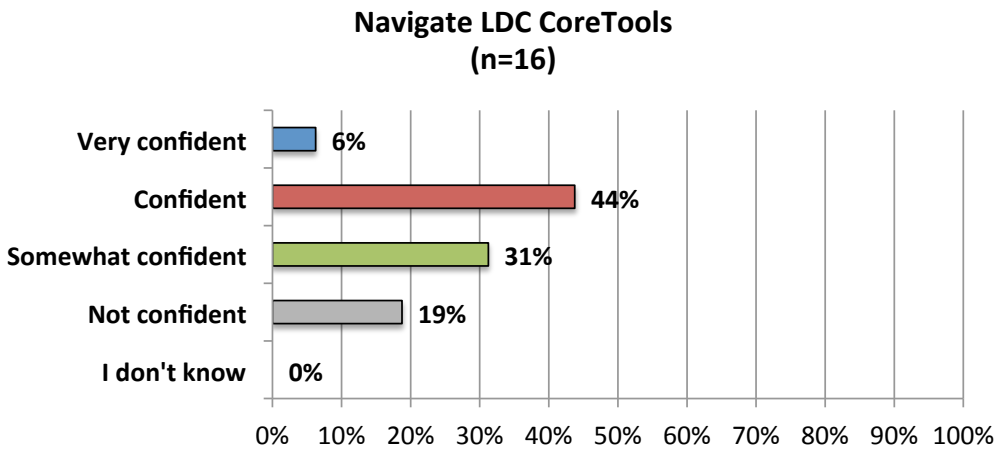
Data collected from Post-Implementation Survey (Q39)



**All data is rounded to the nearest percentage point.*

(*Continued*) How confident are you in your understanding and ability to implement the following components of the LDC instructional model*?

Data collected from Pre-Implementation Survey (Q40)



*Note:" Navigating LDC Core Tools" was only included in the Post-Implementation Survey.

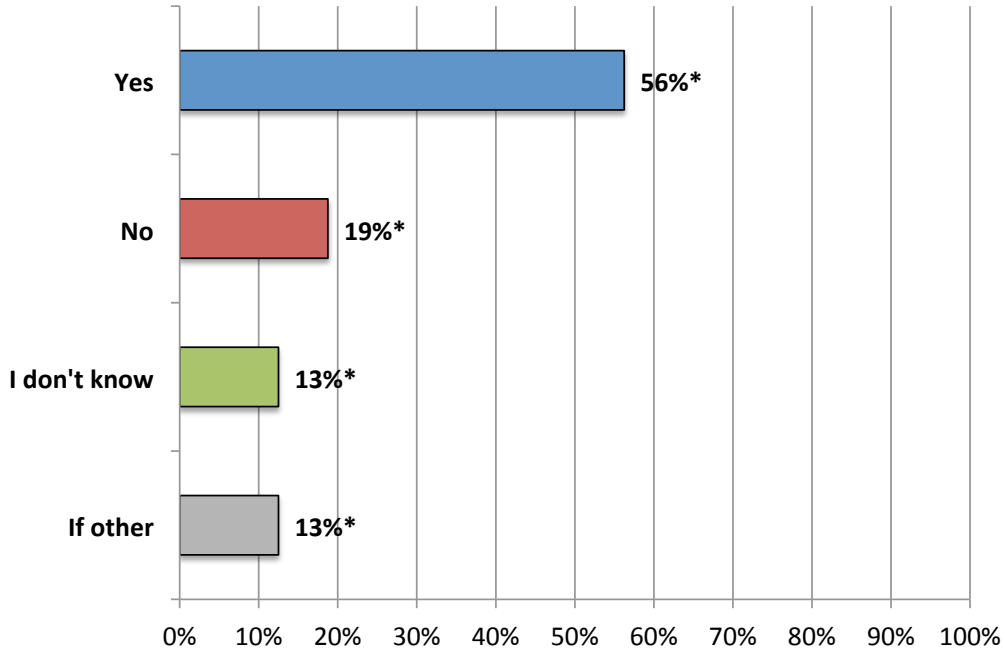
Please describe any shifts in your instructional approaches that you associate with LDC science instruction in your classroom.

Data collected from Post-Implementation Survey (Q40)
(n= 14)

Shifts in Instructional Approaches	Teacher Grade Level	
	Grades 5-8 (n=11)	Grades 9-12 (n=3)
Focusing on more project based learning	✔	✔
Creating more writing and reading opportunities	✔	✔
Shifting to more real world learning	✔	✔
Improving development of project tasks	✔	
Incorporating design process with content	✔	
Highlighting long-term project based curriculum		✔
Adding more research-based projects		✔

Do you plan to use LDC science modules in the 2018-2019 school year?

Data collected from Post-Implementation Survey (Q41)
(n= 16)

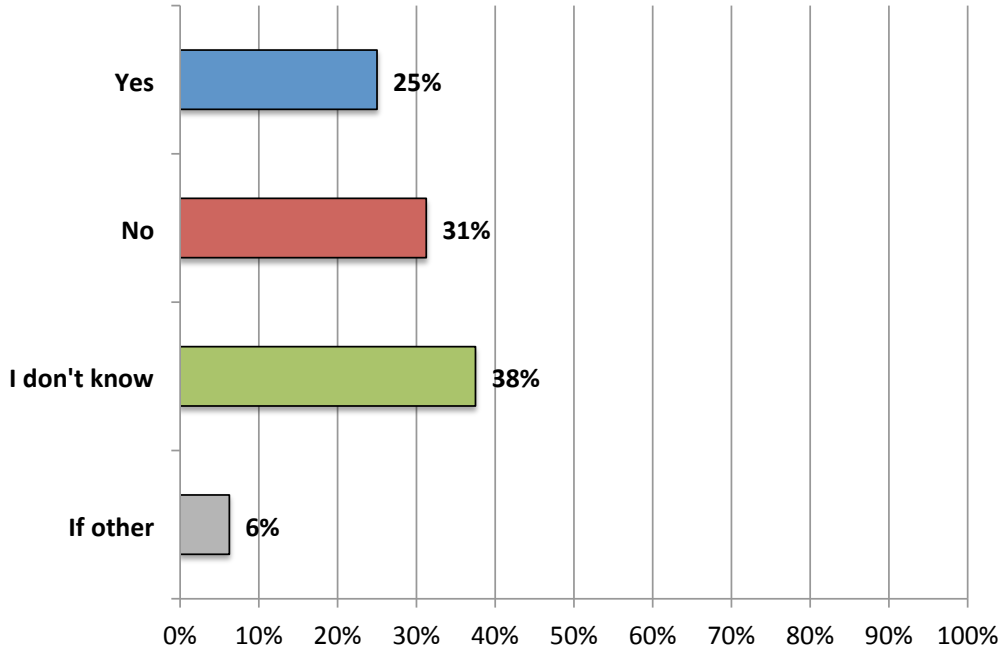


**All data is rounded to the nearest percentage point.*

Note: Respondents were given the option of an "if other" response, which is reflected in the ***Other*** *category (n=2). One respondent shared they will use portions of LDC science modules that are most beneficial to their students. One respondent shared they will use LDC science modules in the 2018-2019 school year if time and access to materials permit.*

If you do plan to use LDC science modules in the 2018-2019 school year, do you plan to engage in cross-content collaboration with other teachers?

Data collected from Post-Implementation Survey (Q42)
(n= 16)



Note: Respondents were given the option of an "if other" response, which is reflected in the ***Other*** *category (n=1). One respondent shared they will engage in cross-content collaboration with other teachers if time permits.*

Briefly describe "Design Thinking" and if you think there are particular benefits for student learning.

(Q41 Pre Survey respondents n=16)*
(Q23 Post Survey respondents n=15)

Anticipated/Pre: ◄
Observed/Post: ►

Design Thinking	Teacher Grade Level	
	Grades 5-8 (Pre n=12)* (Post n=13)	Grades 9-12 (Pre n=6)* (Post n=2)
Structured process	◄ ►	◄ ►
Real world	◄ ►	◄ ►
Product development	◄ ►	◄ ►
Nontraditional	◄ ►	◄
Backward design	◄ ►	◄
Hands-on experience	◄ ►	
Engineering principles		◄ ►
Open ended		►

Benefits to Students	Teacher Grade Level	
	Grades 5-8 (Pre n=12)* (Post n=13)	Grades 9-12 (Pre n=6)* (Post n=2)
Learning from mistakes	◄ ►	◄ ►
Problem solving	◄ ►	◄ ►
Structured process	◄ ►	◄ ►
Communication	◄ ►	◄ ►
Critical thinking	◄ ►	►
Seeing the big picture	◄ ►	►
Organizational skills	◄	►
Creativity	►	►
Research skills	►	►
Collaboration	►	►
Ownership of learning postMS/HS	►	►
Engagement	►	

Two teachers identified as teaching grade levels 5-12.

Impacts on Student Performance*

(Q42 - Pre Survey respondents n=17)**
(Q 43 - Post Survey respondents n=13)

Anticipated/Pre: ➤		
Observed/Post: ➤		
Anticipated/Observed Impacts	Teacher Grade Level	
	Grades 5-8 (Pre n=12)** (Post n=10)	Grades 9-12 (Pre n=7)** (Post n=3)
Writing skills	➤ ➤	➤ ➤
Student growth	➤ ➤	➤ ➤
Student engagement	➤ ➤	➤
Content retention	➤ ➤	➤
Critical thinking	➤ ➤	➤
Real world experience	➤ ➤	➤
Design process	➤	➤ ➤
Problem solving	➤ ➤	
Reading fluency	➤	➤
Increased student focus	➤	
Student buy-in		➤
Research skills	➤	
Learning from mistakes	➤	

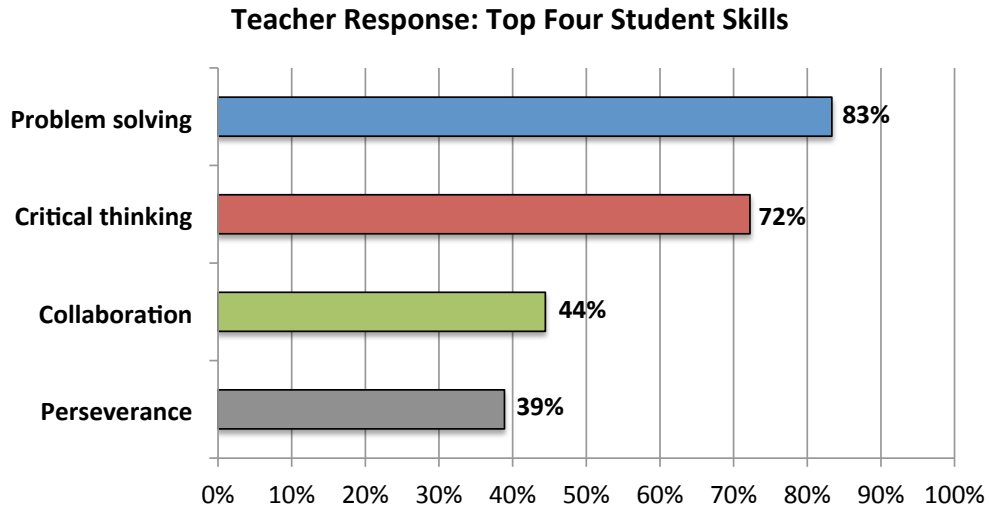
**Pre Survey Q42: Briefly describe any anticipated impacts on student performance using LDC instruction in your classroom.*

Post Survey Q43: Briefly describe any impacts on student performance that you observed this year associated with LDC instruction in your classroom.

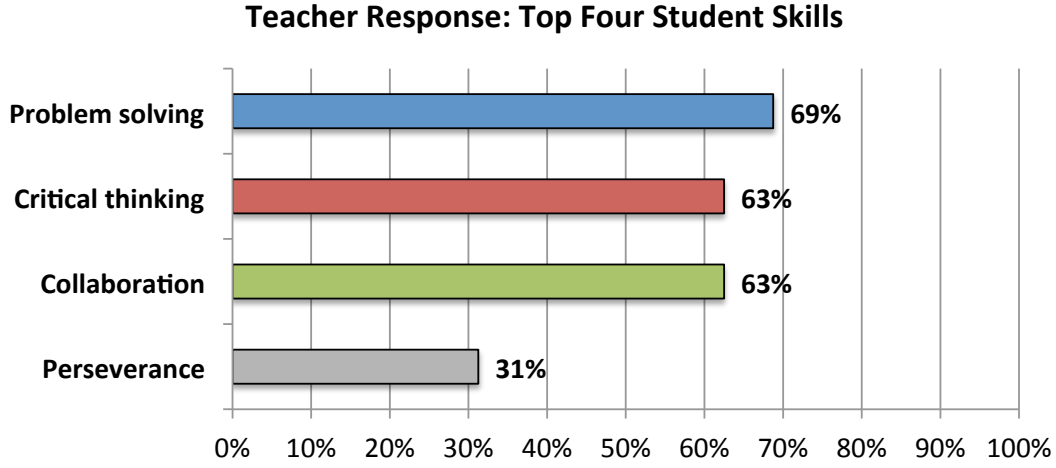
***Two teachers identified as teaching grade levels 5-12.*

What are the top [four] skills you would like your students to develop in your class to prepare them for the future?

Data collected from Pre-Implementation Survey (Q43)
(n= 16)



Data collected from Post-Implementation Survey (Q44)
(n= 18)



Note: Teachers identified four categories among 12 choices:
[(A) Problem solving; B) Critical thinking; C) Collaboration; D) Understanding the scientific process; E) Perseverance; F) Following directions/listening; G) Conducting research; H) Finding resources/valid data to support project design; I) Communication; J) Presenting research/project to their peers or other audience; K) Organization/project management; L) Enhanced understanding of what it takes to be ready for college and career; M) If other, please describe briefly]

Appendix B:

Pre-Implementation (May 2017) and Post-Implementation Survey (March 2018) Question Sets

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Rural LDC Cohort 2 Teacher Pre-Implementation Survey

* 1. **This is an anonymous survey. The PAST Foundation will use this survey data to assess your views on the LDC instructional model and will also help inform professional development and ongoing support provided by LDC Coaches. Completing this survey will give you the opportunity to share your views anonymously.**

Your participation in this research is voluntary. By checking the response below that states you agree to participate in this survey, you confirm that you have read and understand the consent forms provided to you.

○ I agree to participate in this anonymous survey

2. **On which of the following dates did you participate in LDC training? (Please choose all that apply.)**

- ☐ May 10
- ☐ May 15
- ☐ May 17
- ☐ Second session make-up date for May 17
- ☐ August 31
- ☐ September 1

3. **I currently teach (please choose all that apply):**

- ☐ Grade 5
- ☐ Grade 6
- ☐ Grade 7
- ☐ Grade 8
- ☐ Grade 9
- ☐ Grade 10
- ☐ Grade 11
- ☐ Grade 12
- ☐ If other, please describe briefly

_____

4. **In your teaching career, which content areas have you taught? (Please choose all that apply.)**

- ☐ Science
- ☐ Math
- ☐ English
- ☐ Social Studies
- ☐ Arts
- ☐ Physical Education
- ☐ Career Tech
- ☐ Special Education/Intervention
- ☐ Gifted and Talented
- ☐ If other, please describe briefly

_____

5. **In your teaching career, what professional development experiences have you had? (Please choose all that apply.)**

- ☐ Content/Disciplinary literacy
- ☐ Problem based learning
- ☐ Design cycle thinking
- ☐ Backward design
- ☐ Blended Learning
- ☐ Deconstructing the Science Literacy Standards
- ☐ If other, please describe briefly

_____

_____

6. **How comfortable are you using computers as an instructional tool with your students?**

- ○ Very comfortable
- ○ Somewhat comfortable
- ○ Neither comfortable nor uncomfortable
- ○ Not comfortable
- ○ I don't know

7. **In your experience, how important is collaboration and sharing best practices with other teachers?**

- ○ Very important
- ○ Somewhat important
- ○ Not important
- ○ I haven't had the opportunity to work collaboratively with other teachers
- ○ If other, please describe briefly

_____

8. **In your teaching career have you had experience co-teaching a class with another teacher?**

O Yes O No

9. **In your teaching career, have you had experience in mentoring, coaching, or leading professional development for other teachers?**

O Yes O No

10. **In planning for classroom instruction, which method(s) do you prefer? (Please choose all that apply.)**

- ☐ Paper planner/notebook
- ☐ Textbook and related materials
- ☐ Computer offline resources
- ☐ Online text resources
- ☐ Online instructional strategy resources
- ☐ Collaborate face-to-face with teachers in my school
- ☐ Collaborate face-to-face with teachers outside of my school
- ☐ Collaborate online with teachers in my school
- ☐ Collaborate online with teachers outside of my school
- ☐ If other, please describe briefly

_____

_____

11. **How often do you explore the internet for instructional/teaching resources?**

O Not at all

O Once a year

O Once or twice a semester

O Monthly

O Weekly

12. **How often do you share instructional/teaching resources with other teachers?**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

13. **Do you feel comfortable with students working in teams or small groups as part of your instructional practice in your classroom?**

- O Yes
- O No
- O I don't know

14. **I have required my students to write in-depth explanations about a class project or activity.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

15. **I have required my students to use computers or technology to complete an assignment or project.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

16. **I have assigned reading to my students in addition to the class textbook.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

17. **I have required my students to compare and contrast information from one text to another.**

- Not at all
- Once a year
- Once or twice a semester
- Monthly
- Weekly

18. **I have required my students to produce writing assignments that make them defend their thinking with support and evidence from what they are reading.**

- Not at all
- Once a year
- Once or twice a semester
- Monthly
- Weekly

19. **I have required my students to orally defend their conclusions from an investigation or project before their peers.**

- Not at all
- Once a year
- Once or twice a semester
- Monthly
- Weekly

20. **I have required my students to use data collected during investigations or projects to justify and defend their conclusions.**

- Not at all
- Once a year
- Once or twice a semester
- Monthly
- Weekly

21. **I have required my students to complete assignments using the vocabulary associated with the subject area being taught.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

22. **I have required my students to develop and analyze tables, charts and graphs in schoolwork.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

23. **I have required my students to work on open-ended problems for which there is no immediately obvious method of solution.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

24. **I have required my students to work on an extended, major project that lasts one week or more.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Once or twice a month

25. **I have required my students to work in cooperative groups to deepen understanding of content.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

26. **I have required my students to work in groups to complete a written product as a component of a project.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

27. **I have required my students to take a test that is predominantly essay questions.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

28. **I have required my students to read science related materials (besides textbooks) and show their understanding through writing.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

29. **I have required my students to complete a writing assignment that addresses an authentic (real-life) problem in the community or work setting.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

30. **I have required my students to use science equipment to perform lab activities and use the information (data) collected to complete written assignments in science class.**

- O Not at all
- O Once a year
- O Once or twice a semester
- O Monthly
- O Weekly

31. **Do you provide students with a scoring rubric at the beginning of a project to indicate what is required for the student to be scored 'proficient' or above?**

O Yes O No

32. **If yes, do you use this same rubric over time to provide students with feedback on how they are progressing?**

O Yes

O No

O Other

33. **How important is it that your administrators understand the LDC instructional strategies that you will be implementing in your classroom this year?**

- O Very important
- O Somewhat important
- O Not important
- O I don't know yet
- O If other, please describe briefly

_____

34. **How important is it for parents to know about/understand the LDC model for science literacy and learning?**

- O Very important
- O Somewhat important
- O Not important
- O I don't know yet
- O If other, please describe briefly

_____

35. **What do you anticipate to be your greatest challenge with implementing your LDC module with your students?**

_____

_____

_____

_____

36. **How important is it to have ongoing access to LDC coaches during implementation of LDC modules in your classroom?**

- O Very important
- O Somewhat important
- O Not important
- O I don't know yet
- O If other, please describe briefly

_____

37. **How well prepared are you to implement your LDC module in your classroom? (Please choose all that apply.)**

- ☐ I think I am very well prepared and will begin implementing LDC in my classroom immediately.
- ☐ I think I will benefit from additional face-to-face session(s) with an LDC coach.
- ☐ I would like to have one-on-one onsite classroom support from an LDC coach.
- ☐ I would like to have virtual access to an LDC coach to participate in a brainstorm session and explore strategies for implementing my LDC module.
- ☐ I would like to be able to communicate with an LDC coach as needed.

38. **How would you describe your first LDC module?**

- O I think the science and literacy teaching task/assignment is well designed and I have a quality instructional plan which I can immediately implement with my students.
- O I think the science and literacy teaching task/assignment is well designed and my instructional plan is pretty close. It will allow me to begin implementation immediately with my students, but I expect to modify the module as I go.
- O I think I need to work on both my science and literacy teaching task/assignment and my instructional plan before I can begin implementation with my students.
- O I will need to rethink my entire module and develop new ideas for both my science and literacy teaching task/assignment and my instructional plan.

39. **How confident are you about the following aspects of implementing your LDC module?**

	Very confident	Confident	Somewhat confident	Not confident	I don't know
Find time to revise/complete my LDC module	O	O	O	O	O
Find time during classroom instruction with students to implement the LDC module	O	O	O	O	O
Find time to work with LDC coaches	O	O	O	O	O

40. **How confident are you in your understanding and ability to implement the following components of the LDC instructional model?**

	Very confident	Confident	Somewhat confident	Not confident	I don't know
Construct an authentic science and literacy assignment [teaching task]	O	O	O	O	O
Identify a focus set of science standards to drive the assignment	O	O	O	O	O
Identify a focus set of common core literacy standards to drive the assignment	O	O	O	O	O
Select complex and content rich text(s) that align to a specific set of student learning goals	O	O	O	O	O
Select a student work product that is relevant to the student learning goals of the assignment	O	O	O	O	O
Develop a quality instructional plan	O	O	O	O	O
Backward-design a sequence of skills from the assignment aligned to student learning goals	O	O	O	O	O
Develop instruction that allows students to demonstrate the skills needed to meet the expectations of the assignment	O	O	O	O	O
Develop instruction that allows for ongoing checks (scoring guide) for understanding student skill development	O	O	O	O	O
Collaborate with other LDC project teachers	O	O	O	O	O

41. **Briefly describe "design cycle thinking" and if you think there are particular benefits for student learning.**

_____

_____

_____

_____

42. **Briefly describe any anticipated impacts on student performance using LDC instruction in your classroom.**

_____

_____

_____

_____

43. **What are the *top THREE skills* you would like your students to develop in your class to prepare them for the future? Please remember to choose *ONLY THREE* of the following options.**

- ☐ Problem solving
- ☐ Critical thinking
- ☐ Collaboration
- ☐ Understanding the scientific process
- ☐ Perseverance
- ☐ Following directions/listening
- ☐ Conducting research
- ☐ Finding resources/valid data to support project design
- ☐ Communication
- ☐ Presenting research/project to their peers or other audience
- ☐ Organization/project management
- ☐ Enhanced understanding of what it takes to be ready for college and career
- ☐ If other, please describe briefly

_____

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Rural LDC Cohort 2 Post Implementation Survey

* 1. **This is an anonymous survey. The PAST Foundation will use this survey data to assess your views on the LDC instructional model and will also help inform professional development and ongoing support provided by LDC Coaches. Completing this survey will give you the opportunity to share your views anonymously.**

Your participation in this research is voluntary. By checking the response below that states you agree to participate in this survey, you confirm that you have read and understand the consent forms provided to you.

O I agree to participate in this anonymous survey

2. **I currently teach (please choose all that apply):**

☐ Grades 5-8

☐ Grades 9-12

3. **In your experience, how important is collaboration and sharing best practices with other teachers?**

O Very important

O Somewhat important

O Not important

O I haven't had the opportunity to work collaboratively with other teachers

O If other, please describe briefly

_____

4. **In the 2017-18 year of LDC implementation did you engage in collaboration with other LDC teachers in any way?**

O Yes O No

5. **During the 2017-18 school year, did you engage in mentoring, coaching other teachers or leading professional development sessions?**

O Yes O No

6. **During the 2017-18 year of LDC implementation, I required my students to write in-depth explanations about a class project or activity.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

7. **During the 2017-18 year of LDC implementation, I required my students to use computers or technology to complete an assignment or project.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

8. **During the 2017-18 year of LDC implementation, I assigned reading to my students in addition to the class textbook.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

9. **During the 2017-18 year of LDC implementation, I required my students to compare and contrast information from one text to another.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

10. **During the 2017-18 year of LDC implementation, I required my students to produce writing assignments that made them defend their thinking with support and evidence from what they read.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

11. **During the 2017-18 year of LDC implementation, I required my students to orally defend their conclusions from an investigation or project before their peers.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

12. **During the 2017-18 year of LDC implementation, I required my students to use data collected during investigations or projects to justify and defend their conclusions.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

13. **During the 2017-18 year of LDC implementation, I required my students to complete assignments using the vocabulary associated with the subject area being taught.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

14. **During the 2017-18 year of LDC implementation, I required my students to develop and analyze tables, charts and graphs in schoolwork.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

15. **During the 2017-18 year of LDC implementation, I required my students to work on open-ended problems for which there is no immediately obvious method of solution.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

16. **During the 2017-18 year of LDC implementation, I required my students to work on an extended, major project that lasted one week or more.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Once or twice a month

17. **During the 2017-18 year of LDC implementation, I required my students to work in cooperative groups to deepen understanding of content.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

18. **During the 2017-18 year of LDC implementation, I required my students to work in groups to complete a written product as a component of a project.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

19. **During the 2017-18 year of LDC implementation, I required my students to take a test that is predominantly essay questions.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

20. **During the 2017-18 year of LDC implementation, I required my students to read science related materials (besides textbooks) and show their understanding through writing.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

21. **During the 2017-18 year of LDC implementation, I required my students to complete a writing assignment that addressed an authentic (real-life) problem in the community or work setting.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

22. **During the 2017-18 year of LDC implementation, I required my students to use science equipment to perform lab activities and use the information (data) collected to complete written assignments in science class.**

- ○ Not at all
- ○ Once a year
- ○ Once or twice a semester
- ○ Monthly
- ○ Weekly

23. **Briefly describe "design cycle thinking" and if you think there are particular benefits for student learning.**

_____

_____

_____

_____

24. **During the 2017-18 year of LDC implementation do you think that your building administrators were provided sufficient information to understand the LDC Science and Literacy Project?**

- O Yes
- O No
- O I don't know

25. **How important is it for your building administrators to understand the LDC instructional strategies that you implemented in your classroom this year?**

- O Very important
- O Somewhat important
- O Not important
- O I don't know yet
- O If other, please describe briefly

_____

26. **During the 2017-18 year of LDC implementation do you think that parents were provided sufficient information to understand the LDC Science and Literacy Project?**

- O Yes
- O No
- O Not applicable

27. **How important is it for parents to understand the LDC model for science literacy and learning?**

- O Very important
- O Somewhat important
- O Not important
- O I don't know yet
- O If other, please describe briefly

_____

28. **How would you describe your first LDC module (fall 2017)?**

- O I think the science and literacy teaching task was well designed and I had a quality instructional plan which I immediately implemented with my students ("Good to go").
- O I think the science and literacy teaching task was well designed and my instructional plan was pretty close. It allowed me to begin implementation immediately with my students, but I modified the module as I went along ("Work-in-progress").
- O I needed to work on both my science and literacy teaching task and my instructional plan before I began implementation with my students ("Work-in-progress").

29. **Beyond the on-site PD days, how many additional hours did you work to prepare for evaluating student work on November 21st?**

- O 1-5 hours
- O 6-10 hours
- O 11-15 hours
- O 15+ hours
- O If other, please describe briefly

_____

_____

30. **What was your greatest challenge with implementing your first LDC module (fall 2017)?**

_____

_____

_____

_____

31. **How would you describe your second LDC module (spring 2018)?**

O I think the science and literacy teaching task was well designed and I had a quality instructional plan which I immediately implemented with my students ("Good to go").

O I think the science and literacy teaching task was well designed and my instructional plan was pretty close. It allowed me to begin implementation immediately with my students, but I modified the module as I went along ("Work-in-progress").

O I needed to work on both my science and literacy teaching task and my instructional plan before I began implementation with my students ("Work-in-progress").

32. **Beyond the on-site PD days, how many additional hours did you work to prepare for evaluating student work on March 7th?**

O 1-5 hours

O 6-10 hours

O 11-15 hours

O 15+ hours

O If other, please describe briefly

_____

_____

33. **What was your greatest challenge with implementing your second LDC module (spring 2018)?**

_____

_____

_____

_____

34. **During the 2017-18 year of the LDC Project, what aspect of your experience was the most helpful to you to support LDC module implementation in your classroom? (For example: working with Cohort 1 teachers, using Cohort 1 LDC modules, good support from your administrators, etc.)**

_____

_____

_____

_____

35. **How important was it to you to have ongoing access to LDC training facilitators in your first year of implementation of the LDC Science and Literacy project?**

O Very important

O Somewhat important

O Not important

O I don't know yet

O Not applicable

O If other, please describe briefly

_____

36. **How important was it to you to have ongoing access to Cohort 1 teachers in your first year of implementation of the LDC Science and Literacy project?**

O Very important

O Somewhat important

O Not important

O I don't know yet

O Not applicable

O If other, please describe briefly

_____

37. **How important was it for you to have on-site coaching (High Schools that Work, Cohort 1 teachers) in your building during the fall 2017 and spring 2018 to support implementation of LDC modules in your classroom?**

- O Very important
- O Somewhat important
- O Not important
- O I don't know yet
- O Not applicable
- O If other, please describe briefly

_____

38. **Please select the ways you preferred to receive feedback on your LDC modules between PD workshops.**

- ☐ Comments posted directly on CoreTools
- ☐ Via email
- ☐ During the school day, on-site coach visit to my classroom
- ☐ During the school day, in a virtual meeting (skype, zoom, etc.)
- ☐ During prep period, by phone
- ☐ During prep period, on-site coach visit to my classroom
- ☐ During prep period, in a virtual meeting (skype, zoom, etc.)
- ☐ After school, by phone
- ☐ After school, on-site coach visit to my classroom
- ☐ After school, in a virtual meeting (skype, zoom, etc.)
- ☐ During the weekend, by phone
- ☐ During the weekend, in a face-to-face meeting
- ☐ During the weekend, in a virtual meeting (skype, zoom, etc.)
- ☐ Not applicable
- ☐ If other, please describe briefly

_____

_____

39. **How confident are you in your understanding and ability to implement the following components of the LDC instructional model?**

	Very confident	Confident	Somewhat confident	Not confident	I don't know
Construct an authentic science and literacy assignment [teaching task]	O	O	O	O	O
Identify a focus set of science standards to drive the assignment	O	O	O	O	O
Identify a focus set of common core literacy standards to drive the assignment	O	O	O	O	O
Select complex and content rich text(s) that align to a specific set of student learning goals	O	O	O	O	O
Select a student work product that is relevant to the student learning goals of the assignment	O	O	O	O	O
Develop a quality instructional plan	O	O	O	O	O
Backward-design a sequence of skills from the assignment aligned to student learning goals	O	O	O	O	O
Develop instruction that allows students to demonstrate the skills needed to meet the expectations of the assignment	O	O	O	O	O
Develop instruction that allows for ongoing checks (scoring guide) for understanding student skill development	O	O	O	O	O
Navigate LDC CoreTools	O	O	O	O	O
Collaborate with other LDC project teachers	O	O	O	O	O

40. **Please describe any shifts in your instructional approaches that you associate with LDC science instruction in your classroom.**

_____

_____

_____

_____

41. **Do you plan to use LDC science modules in the 2018-2019 school year?**

O Yes

O No

O I don't know

O If other, please describe briefly

_____

42. **If you do plan to use LDC science modules in the 2018-2019 school year, do you plan to engage in cross-content collaboration with other teachers?**

O Yes

O No

O I don't know

O If other, please describe briefly

_____

43. **Briefly describe any impacts on student performance that you observed this year associated with LDC instruction in your classroom.**

_____

_____

_____

_____

44. **What are the *top THREE skills* you think your students developed to help prepare them for the future as a result of LDC instruction? Please remember to choose *ONLY THREE* of the following options.**

- ☐ Problem solving
- ☐ Critical thinking
- ☐ Collaboration
- ☐ Understanding the scientific process
- ☐ Perseverance
- ☐ Following directions/listening
- ☐ Conducting research
- ☐ Finding resources/valid data to support project design
- ☐ Communication
- ☐ Presenting research/project to their peers or other audience
- ☐ Organization/project management
- ☐ Enhanced understanding of what it takes to be ready for college and career
- ☐ If other, please describe briefly

_____

Appendix C:

LDC Cohort 2 Pre/Post Surveys – List of Comparative Questions

LDC Cohort 2 Pre-Post Surveys 2017-18 LIST OF COMPARATIVE QUESTIONS					
PRE Q#	POST Q#	QUESTION	TYPE OF Q	GRAPHIC	NOTES
7	3	In your experience how important is collaboration and sharing best practices with other teachers?	Likert	Bar Charts (2)	
9	5	Have you had experience in mentoring, coaching, or leading professional development for other teachers?	Y/N	Bar Charts (2)	
14	6	***I have required my students to*** write in-depth explanations about a class project or activity:	Drop down list	Bar Charts (2)	
15	7	***I have required my students to*** use computers or technology to complete an assignment or project:	Drop down list	Bar Charts (2)	
16	8	***I have assigned*** reading to my students in addition to the class textbook:	Drop down list	Bar Charts (2)	
17	9	***I have required my students to*** compare and contrast informatino from one text to another.	Drop down list	Bar Charts (2)	
18	10	***I have required my students to*** produce writing assignments that make them defend their thinking with support and evidence from what they are reading:	Drop down list	Bar Charts (2)	
19	11	***I have required my students to*** orally defend their conclusions from an investigation or project before their peers:	Drop down list	Bar Charts (2)	
20	12	***I have required my students to*** use data collected during investigations or projects to justify and defend their conclusions:	Drop down list	Bar Charts (2)	
21	13	***I have required my students to*** complete assignments using the vocuabulary associated with the subject area being taught:	Drop down list	Bar Charts (2)	
22	14	***I have required my students to*** develop and analyze tables, charts and graphs in schoolwork:	Drop down list	Bar Charts (2)	
23	15	***I have required my students to*** work on open-ended problems for which there is no immediately obvious method of solution:	Drop down list	Bar Charts (2)	

LDC Cohort 2 Pre-Post Surveys 2017-18 LIST OF COMPARATIVE QUESTIONS					
PRE Q#	POST Q#	QUESTION	TYPE OF Q	GRAPHIC	NOTES
24	16	I have required my students to work on an extended, major project that lasts one week or more:	Drop down list	Bar Charts (2)	
25	17	I have required my students to work in cooperative groups to deepen understanding of content:	Drop down list	Bar Charts (2)	
26	18	I have required my students to work in groups to complete a written product as a component of a project:	Drop down list	Bar Charts (2)	
27	19	I have required my students to take a test that is predominantly essay questions:	Drop down list	Bar Charts (2)	
28	20	I have required my students to read science related materials (besides textbooks) and show their understanding through writing:	Drop down list	Bar Charts (2)	
29	21	I have required my students to complete a writing assignment that addresses an authentic (real-life) problem in the community or work setting:	Drop down list	Bar Charts (2)	
30	22	I have required my students to use science equipment to perform lab activities and use the information (data) collected to complete written assignments in science class:	Drop down list	Bar Charts (2)	
33	25	How important is it that your administrators understand the LDC instructional strategies that you will be implementing in your classroom this year?	Likert	Bar Charts (2)	
34	27	How important is it for parents to know about/understand the LDC model for science literacy and learning?	Likert	Bar Charts (2)	
35	30/33	Teachers greatest challenge(s) with implementing LDC modules with their students.	Open ended	Table	Table was not included in Preliminary Post-survey report
38	28	How would you describe your first LDC module (fall 2017)?	Drop down list	Bar Charts (2)	

LDC Cohort 2 Pre-Post Surveys 2017-18 LIST OF COMPARATIVE QUESTIONS					
PRE Q#	POST Q#	QUESTION	TYPE OF Q	GRAPHIC	NOTES
40	39	How confident are you in your understanding and ability to implement the following components of the LDC instructional model?	Likert	Bar Charts (19)*	10 pages of comparative tables; See also narrative report, Table 3
41	23	Briefly describe "Design Thinking" and if you think there are particular benefits for student learning.	Open ended	Table	Table was not included in Preliminary Post-survey report
42	43	Impacts on Student Performance.	Open ended	Table	Table was not included in Preliminary Post-survey report
43	44	What are the top three skills you would like your students to develop in your class to prepare them for the future?	Drop down list	Bar Charts (2)	Post response identified (4) top skills; pre-Q modified to show top (4)
POST ONLY					
	4	In the 2017-18 year of LDC implementation did you engage in collaboration with Other LDC teachers in anyway?	Y/N	Bar Chart	
	24	During the 2017-18 year of LDC implementation do you think that your buiding administrators were provided sufficient information to understad the KDC Science and Literacy Project?	Y/N	Bar Chart	
	26	During the 2017-18 year of LDC implementation do you think that parents were provided sufficient information to understad the KDC Science and Literacy Project?	Y/N	Bar Chart	
	29	Beyond the on-site PD days, how many additional hours did you work to prepare for evaluating student work on November 21st	Drop down list	Bar Chart	
	31	How would you describe your second LDC module (spring 2018)	Drop down list	Bar Chart	
	32	Beyond the on-site PD days, how many additional hours did you work to prepare for evaluating student work on March 7th (2018)?	Drop down list	Bar Chart	

LDC Cohort 2 Pre-Post Surveys 2017-18 LIST OF COMPARATIVE QUESTIONS					
PRE Q#	POST Q#	QUESTION	TYPE OF Q	GRAPHIC	NOTES
POST ONLY (CONTINUED)					
	34	During the 2017-18 year of the LDC Project, what aspect of your experience was the most helpful to you to support LDC module implementation in your classroom? (For example: working with Cohort 1 teachers, using Cohort 1 LDC modules, good support from your administrators, etc.)	Open ended	Table	Table was not included in Preliminary Post-survey report
	35	How important was it to you to have ongoing access to LDC training facilitators in your first year of of the LDC Science and Literacy project?	Likert	Bar Chart	
	36	How important was it to you to have ongoing access to Cohort 1 teachers in your first year of implementation of the LDC Science and Literacy project?	Likert	Bar Chart	
	37	How important was it to you to have onsite coaching (High Schools that Work, Cohort 1 teachers) in your building during fall 2017 and spring 2018 to support implementation of LDC modules in your classroom?	Likert	Bar Chart	
	38	Please select the ways you preferred to receive feedback on your LDC modules between PD workshops.	Drop down list	Bar Chart	
	39	How confident are you in your understanding and ability to implement the following components of the LDC instructional model (to) Nagivate LDC Core Tools?	Likert	Bar Chart	*This was added as a new component of LDC implementation to Post-Q39 (no pre-survey version of this question)
	40	Please describe any shifts in your instructional approaches that you associate with LDC science instruction in your classroom.	Open ended	Table	Table was not included in Preliminary Post-survey report

LDC Cohort 2 Pre-Post Surveys 2017-18 LIST OF COMPARATIVE QUESTIONS					
PRE Q#	POST Q#	QUESTION	TYPE OF Q	GRAPHIC	NOTES
	41	Do you plan to use LDC science modules in the 2018-19 school year?	Drop down list	Bar Chart	
	42	If you do plan to use LDC science modules in the 2018-19 school year, do you plan to engage in cross-content collaboration with other teachers?	Y/N	Bar Chart	

Appendix D:

Pre-Implementation Aggregated Data Survey Report

October 20, 2017

Rural LDC Cohort 2 Pre-Implementation Survey
The Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (LDC)
October 20, 2017

This document is the final report of survey responses for the LDC Science and Literacy Project 2017 Cohort 2 Pre-Implementation Survey. Project districts include: Northwestern Local Schools, Mapleton Local Schools, Hillsdale Local School District, Loudonville-Perrysville Exempted Village Schools, and Black River Local Schools. The survey was completed by Cohort 2 teachers (n=18).

The report presents bar charts for survey responses for Qs 1-34, Qs 36-40, Q32 and 43. Open-ended responses (Qs 35, 41, 42) are presented in table format in this report. Questions that provided the option for respondents to select an open-ended "if other" comment are presented as written.

SURVEY PROTOCOL

The Rural Collaborative 2017 Teacher pre-implementation survey was administered during the second day of the cohort 2 professional development sessions. Two options to initiate LDC training for implementation during fall 2018 were offered to participating districts. Training was conducted on May 10th and May 17th, with a make-up date for the first session held on May 15th. For those unable to participate in May, training was held August 31st to September 1st. The survey was administered on May 17th (n=10) and on September 1st (n=8) via a secure web-based platform (SurveyMethods®) designed for conducting a confidential and anonymous survey. Survey participants were asked to review survey protocols prior to voluntary agreement to participate in the pre-implementation survey.

SUMMARY OF SURVEY QUESTIONS AND ISSUES

Qs 2-4 are profile questions.

Q5 and Qs7-9 are questions regarding teachers' experiences in their careers. Teachers were asked about past professional development experience, and if they have experience with coaching other teachers or leading professional development sessions. Teachers were also asked about co-teaching, collaboration and sharing best practices with other teachers.

Q6, Qs10-13 are questions regarding teachers' preferred instructional practices and tools. Teachers were asked to indicate their level of comfort with using computers as an instructional tool, and working with students in teams or small groups as part of their instructional practice in their classroom. Teachers were also asked to indicate which methods they prefer from a dropdown menu in planning for classroom instruction. Teachers were asked how often they explore the internet for instructional/teaching resources, and how often they share instructional/teaching resources with other teachers.

Qs 14-30 are questions regarding teachers' past instructional practices related to requiring students to conduct research and complete written components of class assignments.

Qs 31-32 asked teachers if they provide students with a scoring rubric at the beginning of a project to indicate what is required for the student to be scored 'proficient' or above, and if so, do they use the same rubric over time to provide students with feedback on how they are progressing.

Qs 33-35 asked teachers how important is it for administrators and parents to know about and understand the LDC science instructional strategies.

Qs 35-37 are questions regarding implementation of the LDC science module. *Q35* asked teachers to identify the biggest challenge(s) they anticipate with implementation of the LDC module with their students. *Q36* provides feedback from teachers about importance of access to LDC coaches during implementation of LDC science modules in their classroom. *Q37* asked teachers to self-evaluate how well prepared they are to implement their LDC module in their classroom.

Qs 38-40 asked teachers to self-evaluate their LDC module and implementation strategy. *Q38* asked teachers to rate their first LDC module. *Q39* asked teachers to rate their confidence level with specific aspects of implementing the LDC science module, and *Q40* asked teachers to self-evaluate their understanding and ability to implement components of the LDC instructional model. Teachers selected from a drop-down menu of skills associated with the LDC instructional model.

Qs 41-42 are open-ended questions asking teachers to describe specific aspects of the LDC science module and impacts on student learning and performance. *Q41* asked teachers to briefly describe "Design Thinking" and particular benefits for student learning. *Q42* asked teachers to briefly describe anticipated impacts on student performance using LDC modules in their classroom.

Q43 asked teachers to identify the top four skills they think are most important for students to prepare for the future.

Knowledge Capture: Rural LDC Cohort 2 Pre-Implementation Survey

1. This is an anonymous survey. The PAST Foundation will use this survey data to assess your views on the LDC instructional model and will also help inform professional development and ongoing support provided by LDC Coaches. Completing this survey will give you the opportunity to share your views anonymously.

Your participation in this research is voluntary. By checking the response below that states you agree to participate in this survey, you confirm that you have read and understand the consent forms provided to you.

	Responses	Percent
I agree to participate in this anonymous survey:	18	100%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

2. On which of the following dates did you participate in LDC training? (Please choose all that apply.)

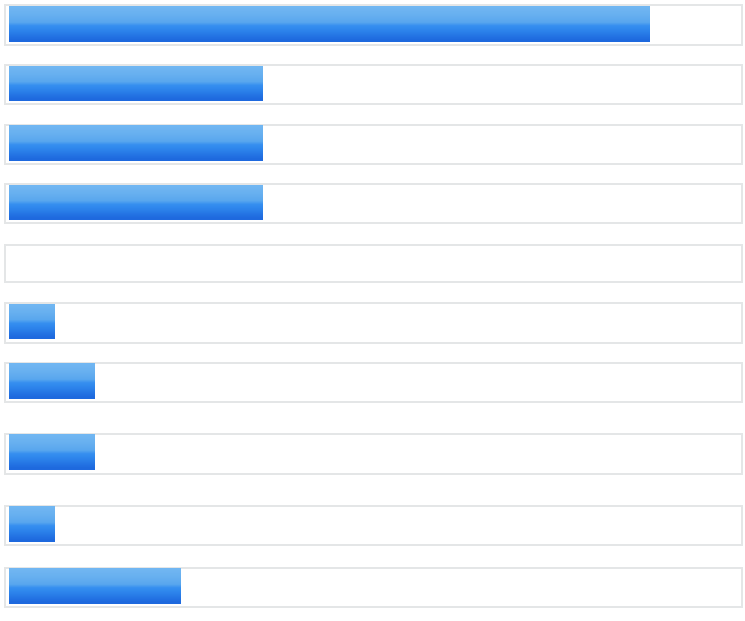
	Responses	Percent
May 10:	6	33.33%
May 15:	2	11.11%
May 17:	10	55.56%
Second session make-up date for May 17:	0	0%
August 31:	7	38.89%
September 1:	8	44.44%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

3. I currently teach (please choose all that apply):

	Responses	Percent
Grade 5:	6	33.33%
Grade 6:	3	16.67%
Grade 7:	4	22.22%
Grade 8:	4	22.22%
Grade 9:	6	33.33%
Grade 10:	6	33.33%
Grade 11:	5	27.78%
Grade 12:	5	27.78%
If other, please describe briefly:	2	11.11%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

[“If other” responses presented in the final report.]

4. In your teaching career, which content areas have you taught? (Please choose all that apply.)



	Responses	Percent
Science:	15	83.33%
Math:	6	33.33%
English:	6	33.33%
Social Studies:	6	33.33%
Arts:	0	0%
Physical Education:	1	5.56%
Career Tech:	2	11.11%
Special Education/Intervention:	2	11.11%
Gifted and Talented:	1	5.56%
If other, please describe briefly:	4	22.22%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

[“If other” responses presented in the final report.]

5. In your teaching career, what professional development experiences have you had? (Please choose all that apply.)

	Responses	Percent
Content and/or Disciplinary literacy:	13	76.47%
Problem based learning:	15	88.24%
Design cycle thinking:	5	29.41%
Backward design:	4	23.53%
Blended Learning:	9	52.94%
Deconstructing the Science Literacy Standards:	3	17.65%
If other, please describe briefly:	7	41.18%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

[“If other” responses presented in the final report.]

6. How comfortable are you using computers as an instructional tool with your students?

	Responses	Percent
Very comfortable:	12	70.59%
Somewhat comfortable:	4	23.53%
Neither comfortable nor uncomfortable:	1	5.88%
Not comfortable:	0	0%
I don't know:	0	0%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

7. In your experience, how important is collaboration and sharing best practices with other teachers?

	Responses	Percent
Very important:	16	88.89%
Somewhat important:	1	5.56%
Not important:	0	0%
I haven't had the opportunity to work collaboratively with other teachers:	1	5.56%
If other, please describe briefly:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

8. In your teaching career have you had experience co-teaching a class with another teacher?

	Responses	Percent
Yes:	11	64.71%
No:	6	35.29%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

9. In your teaching career, have you had experience in mentoring, coaching, or leading professional development for other teachers?

	Responses	Percent
Yes:	13	72.22%
No:	5	27.78%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

10. In planning for classroom instruction, which method(s) do you prefer? (Please choose all that apply.)

	Responses	Percent
Paper planner/notebook:	12	66.67%
Textbook and related materials:	11	61.11%
Computer offline resources:	8	44.44%
Online text resources:	16	88.89%
Online instructional strategy resources:	14	77.78%
Collaborate face-to-face with teachers in my school:	11	61.11%
Collaborate face-to-face with teachers outside of my school:	6	33.33%
Collaborate online with teachers in my school:	5	27.78%
Collaborate online with teachers outside of my school:	5	27.78%
If other, please describe briefly:	2	11.11%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

[“If other” responses presented in the final report.]

11. How often do you explore the internet for instructional/teaching resources?

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	0	0%
Monthly:	2	11.11%
Weekly:	16	88.89%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

12. How often do you share instructional/teaching resources with other teachers?

	Responses	Percent
Not at all:	0	0%
Once a year:	1	5.56%
Once or twice a semester:	1	5.56%
Monthly:	8	44.44%
Weekly:	8	44.44%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

13. Do you feel comfortable with students working in teams or small groups as part of your instructional practice in your classroom?

	Responses	Percent
Yes:	18	100%
No:	0	0%
I don't know:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

14. I have required my students to write in-depth explanations about a class project or activity.

	Responses	Percent
Not at all:	2	11.11%
Once a year:	0	0%
Once or twice a semester:	10	55.56%
Monthly:	5	27.78%
Weekly:	1	5.56%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

15. I have required my students to use computers or technology to complete an assignment or project.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	2	11.11%
Monthly:	6	33.33%
Weekly:	10	55.56%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

16. I have assigned reading to my students in addition to the class textbook.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	5	27.78%
Monthly:	8	44.44%
Weekly:	5	27.78%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

17. I have required my students to compare and contrast information from one text to another.

	Responses	Percent
Not at all:	3	16.67%
Once a year:	3	16.67%
Once or twice a semester:	4	22.22%
Monthly:	4	22.22%
Weekly:	4	22.22%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

18. I have required my students to produce writing assignments that make them defend their thinking with support and evidence from what they are reading.

	Responses	Percent
Not at all:	1	5.56%
Once a year:	2	11.11%
Once or twice a semester:	11	61.11%
Monthly:	1	5.56%
Weekly:	3	16.67%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

19. I have required my students to orally defend their conclusions from an investigation or project before their peers.

	Responses	Percent
Not at all:	1	5.56%
Once a year:	6	33.33%
Once or twice a semester:	5	27.78%
Monthly:	3	16.67%
Weekly:	3	16.67%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

20. I have required my students to use data collected during investigations or projects to justify and defend their conclusions.

	Responses	Percent
Not at all:	0	0%
Once a year:	2	11.11%
Once or twice a semester:	5	27.78%
Monthly:	6	33.33%
Weekly:	5	27.78%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

21. I have required my students to complete assignments using the vocabulary associated with the subject area being taught.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	0	0%
Monthly:	5	27.78%
Weekly:	13	72.22%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

22. I have required my students to develop and analyze tables, charts and graphs in schoolwork.

	Responses	Percent
Not at all:	0	0%
Once a year:	1	5.56%
Once or twice a semester:	2	11.11%
Monthly:	7	38.89%
Weekly:	8	44.44%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

23. I have required my students to work on open-ended problems for which there is no immediately obvious method of solution.

	Responses	Percent
Not at all:	1	5.56%
Once a year:	0	0%
Once or twice a semester:	7	38.89%
Monthly:	5	27.78%
Weekly:	5	27.78%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

24. I have required my students to work on an extended, major project that lasts one week or more.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	15	83.33%
Once or twice a month:	3	16.67%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

25. I have required my students to work in cooperative groups to deepen understanding of content.

	Responses	Percent
Not at all:	0	0%
Once a year:	1	5.56%
Once or twice a semester:	1	5.56%
Monthly:	4	22.22%
Weekly:	12	66.67%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

26. I have required my students to work in groups to complete a written product as a component of a project.

	Responses	Percent
Not at all:	2	11.11%
Once a year:	1	5.56%
Once or twice a semester:	5	27.78%
Monthly:	6	33.33%
Weekly:	4	22.22%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

27. I have required my students to take a test that is predominantly essay questions.

	Responses	Percent
Not at all:	6	33.33%
Once a year:	3	16.67%
Once or twice a semester:	4	22.22%
Monthly:	5	27.78%
Weekly:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

28. I have required my students to read science related materials (besides textbooks) and show their understanding through writing.

	Responses	Percent
Not at all:	3	16.67%
Once a year:	0	0%
Once or twice a semester:	10	55.56%
Monthly:	4	22.22%
Weekly:	1	5.56%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

29. I have required my students to complete a writing assignment that addresses an authentic (real-life) problem in the community or work setting.

	Responses	Percent
Not at all:	6	33.33%
Once a year:	3	16.67%
Once or twice a semester:	6	33.33%
Monthly:	3	16.67%
Weekly:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

30. I have required my students to use science equipment to perform lab activities and use the information (data) collected to complete written assignments in science class.

	Responses	Percent
Not at all:	4	22.22%
Once a year:	2	11.11%
Once or twice a semester:	3	16.67%
Monthly:	4	22.22%
Weekly:	5	27.78%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

31. Do you provide students with a scoring rubric at the beginning of a project to indicate what is required for the student to be scored 'proficient' or above?

	Responses	Percent
Yes:	15	83.33%
No:	3	16.67%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

32. If yes, do you use this same rubric over time to provide students with feedback on how they are progressing?

	Responses	Percent
Yes:	12	70.59%
No:	5	29.41%
Other:	0	0%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

33. How important is it that your administrators understand the LDC instructional strategies that you will be implementing in your classroom this year?

	Responses	Percent
Very important:	15	83.33%
Somewhat important:	3	16.67%
Not important:	0	0%
I don't know yet:	0	0%
If other, please describe briefly:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

34. How important is it for parents to know about/understand the LDC model for science literacy and learning?

	Responses	Percent
Very important:	8	44.44%
Somewhat important:	9	50%
Not important:	0	0%
I don't know yet:	1	5.56%
If other, please describe briefly:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

Q35: What do you anticipate to be your greatest challenge with implementing your LDC module with your students?

(n=18)

Challenges	Teacher Grade Level		
	Grades 5-8 (n=11)	Grades 9-12 (n=4)	Grades 5-12 (n=3)
Time management	✔	✔	✔
Managing content	✔	✔	
Managing student expectations	✔		
Student engagement	✔		
Access to resources	✔		
None anticipated	✔		

36. How important is it to have ongoing access to LDC coaches during implementation of LDC modules in your classroom?

	Responses	Percent
Very important:	14	77.78%
Somewhat important:	2	11.11%
Not important:	2	11.11%
I don't know yet:	0	0%
If other, please describe briefly:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

37. How well prepared are you to implement your LDC module in your classroom? (Please choose all that apply.)

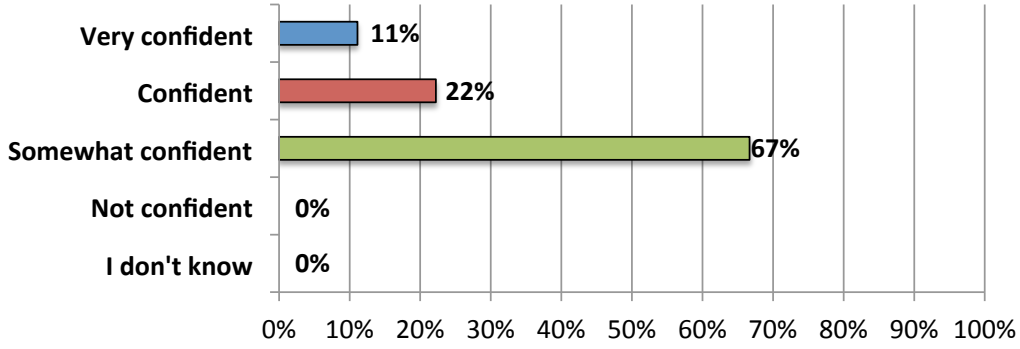
	Responses	Percent
I think I am very well prepared and will begin implementing LDC in my classroom immediately.:	2	11.11%
I think I will benefit from additional face-to-face session(s) with an LDC coach.:	8	44.44%
I would like to have one-on-one onsite classroom support from an LDC coach.:	2	11.11%
I would like to have virtual access to an LDC coach to participate in a brainstorm session and explore strategies for implementing my LDC module.:	5	27.78%
I would like to be able to communicate with an LDC coach as needed.:	11	61.11%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

38. How would you describe your first LDC module?

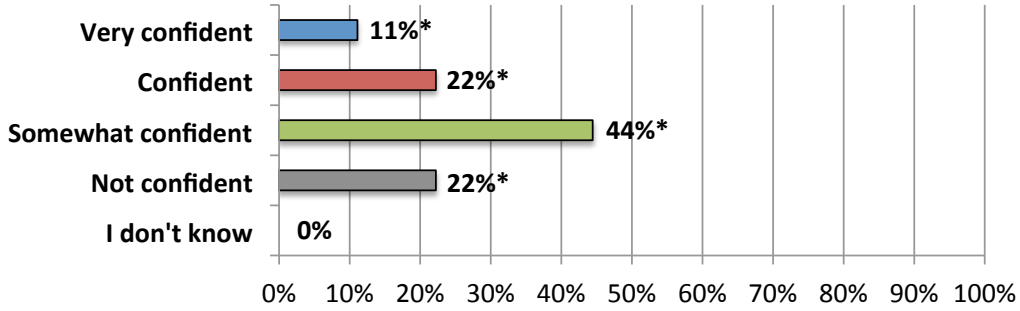
	Responses	Percent
I think the science and literacy teaching task/assignment is well designed and I have a quality instructional plan which I can immediately implement with my students.:	1	5.56%
I think the science and literacy teaching task/assignment is well designed and my instructional plan is pretty close. It will allow me to begin implementation immediately with my students, but I expect to modify the module as I go.:	6	33.33%
I think I need to work on both my science and literacy teaching task/assignment and my instructional plan before I can begin implementation with my students.:	11	61.11%
I will need to rethink my entire module and develop new ideas for both my science and literacy teaching task/assignment and my instructional plan.:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

Q39: How confident are you about the following aspects of implementing your LDC module?
(n=18)

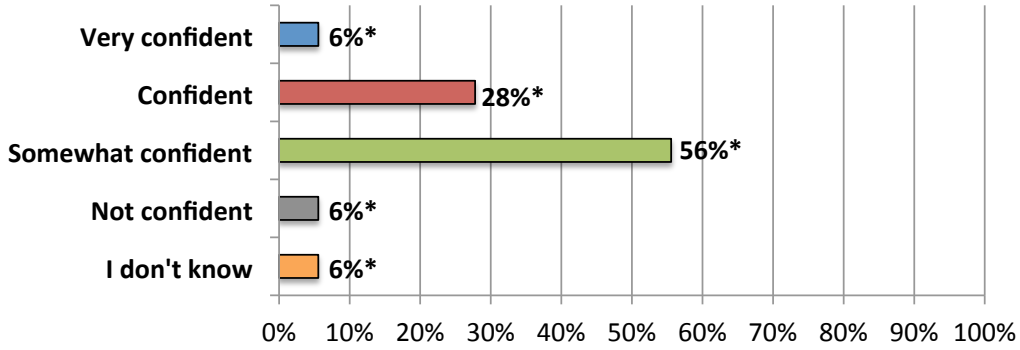
Find time to revise/complete my LDC module (n=18)



Find time during classroom instruction with students to implement the LDC module (n=18)



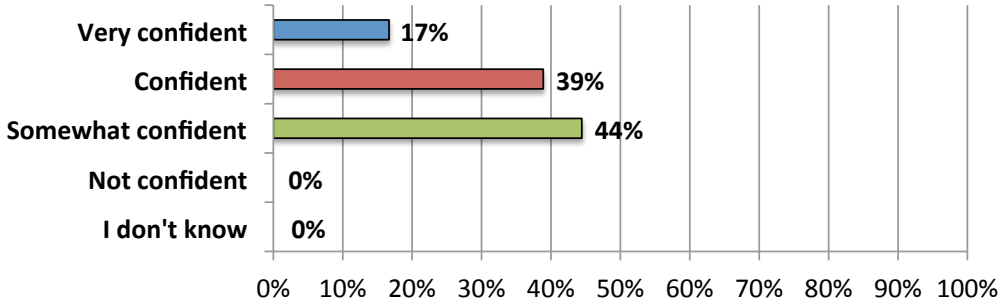
Find time to work with LDC coaches (n=18)



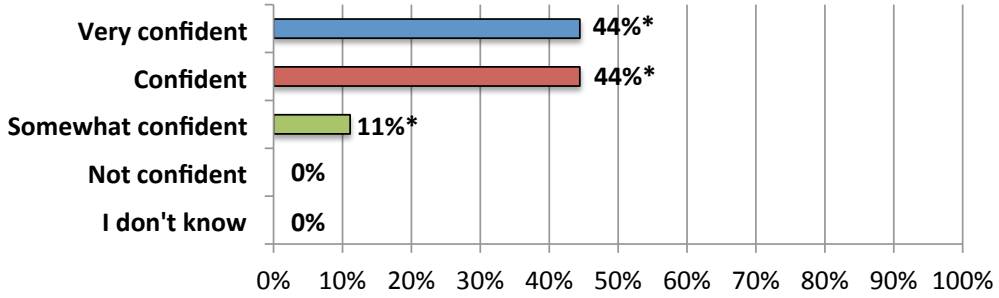
**All data is rounded to the nearest percentage point.*

Q40: How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

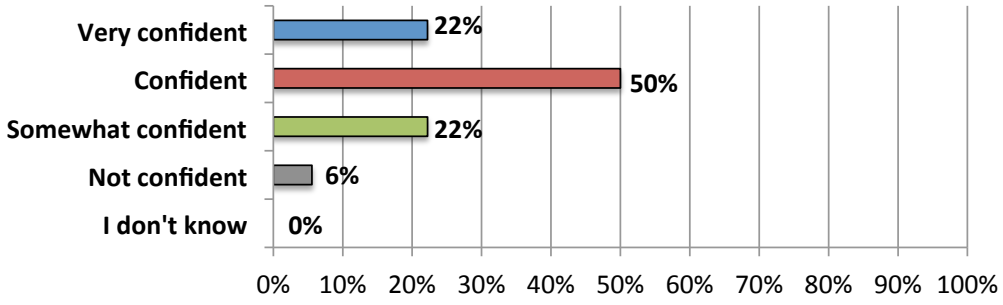
Construct an authentic science and literacy assignment [teaching task] (n=18)



Identify a focus set of science standards to drive the assignment (n=18)



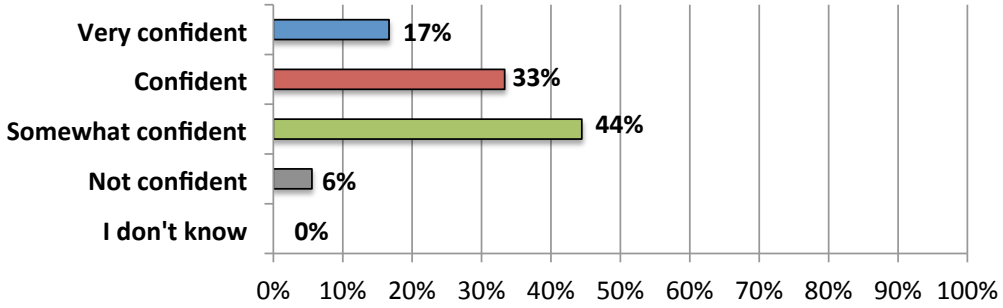
Identify a focus set of common core literacy standards to drive the assignment (n=18)



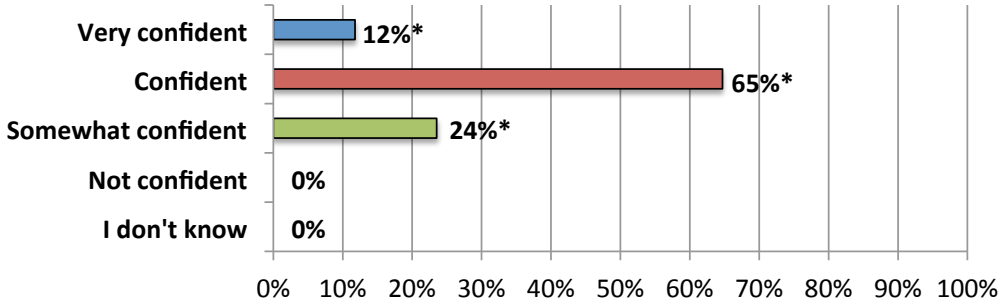
**All data is rounded to the nearest percentage point.*

(Continued) Q40: How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

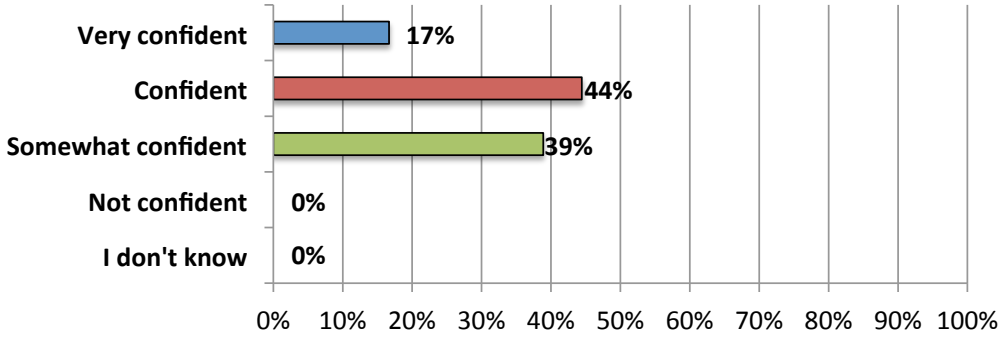
Select complex and content rich text(s) that align to a specific set of student learning goals (n=18)



Select a student work product that is relevant to the student learning goals of the assignment (n=17)



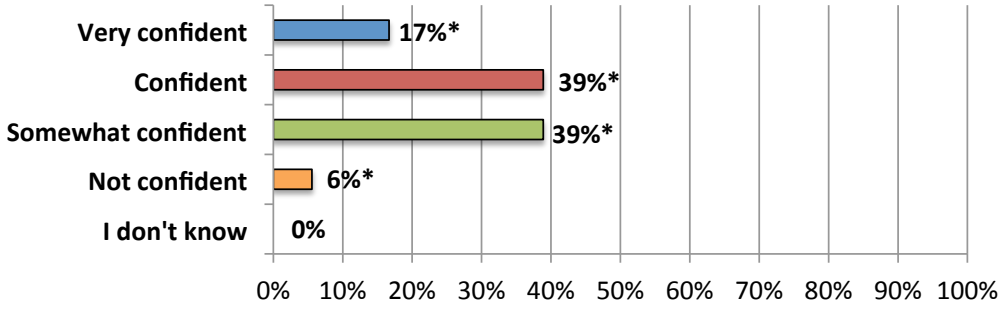
Develop a quality instructional plan (n=18)



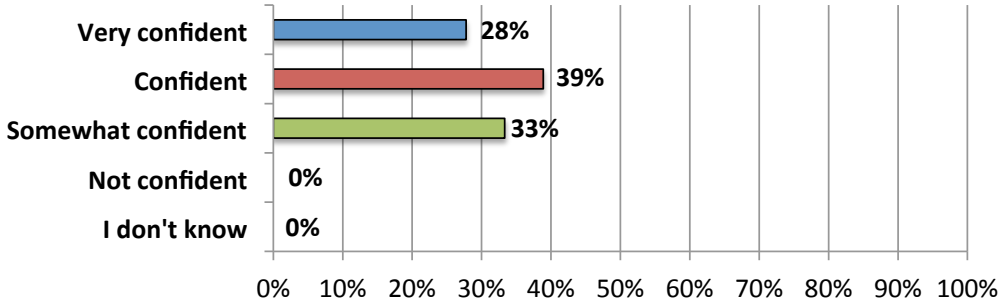
**All data is rounded to the nearest percentage point.*

(Continued) Q40: How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

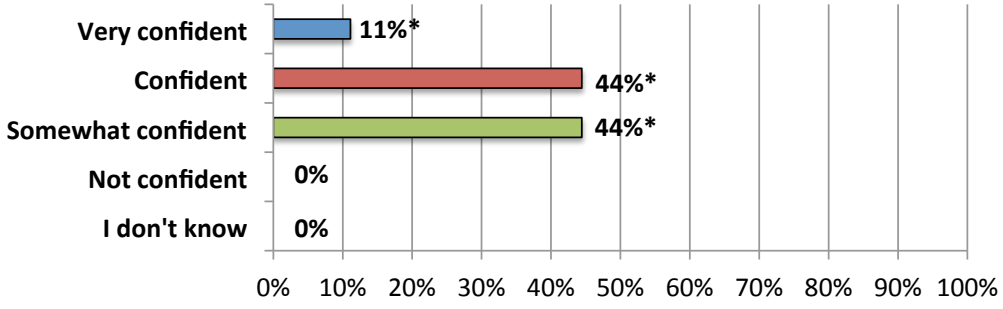
Backward-design a sequence of skills from the assignment aligned to student learning goals (n=18)



Develop instruction that allows students to demonstrate the skills needed to meet the expectations of the assignment (n=18)

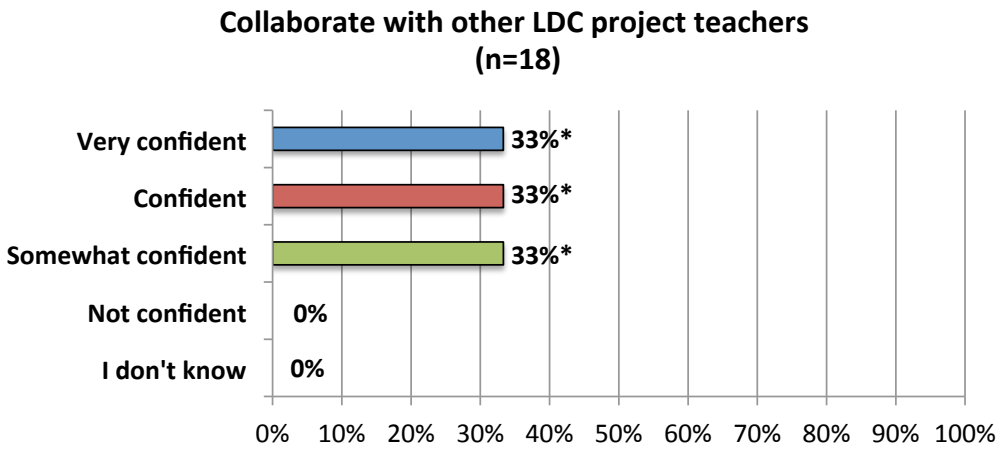


Develop instruction that allows for ongoing checks (scoring guide) for understanding student skill development (n=18)



**All data is rounded to the nearest percentage point.*

(Continued) Q40: How confident are you in your understanding and ability to implement the following components of the LDC instructional model?



*All data is rounded to the nearest percentage point.

Q41: Briefly describe "design cycle thinking" and if you think there are particular benefits for student learning.

(n=16)

Design Thinking	Teacher Grade Level		
	Grades 5-8 (n=10)	Grades 9-12 (n=4)	Grades 5-12 (n=2)
Structured process	✔	✔	✔
Engineering principles	✔	✔	✔
Real world	✔	✔	
Teacher needs more information on Design Cycle Thinking	✔	✔	
Nontraditional	✔		✔
Hands-on experience	✔		
Backward design			✔
Open ended			✔
Product development			✔

Benefits to Students	Teacher Grade Level		
	Grades 5-8 (n=10)	Grades 9-12 (n=4)	Grades 5-12 (n=2)
Problem solving	✔	✔	✔
Critical thinking	✔	✔	✔
Structured process	✔	✔	
Need to learn more	✔	✔	
Seeing the big picture		✔	✔
Organizational skills	✔		✔
Creativity	✔		
Learning from mistakes	✔		
Communication	✔		

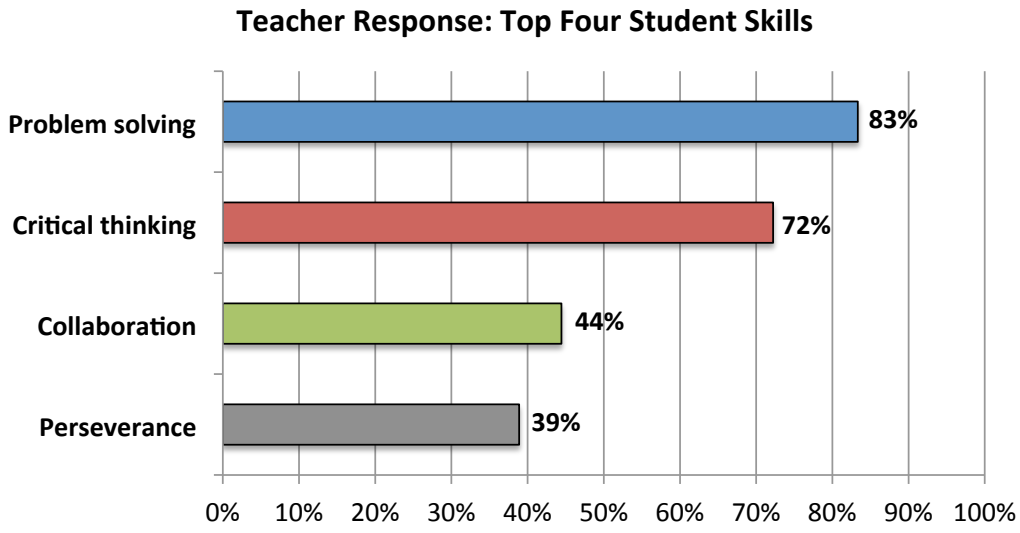
Q42: Briefly describe any anticipated impacts on student performance using LDC components in your classroom.

(n=17)

Anticipated Impacts	Teacher Grade Level		
	Grades 5-8 (n=10)	Grades 9-12 (n=4)	Grades 5-12 (n=3)
Student engagement	✔	✔	✔
Writing skills	✔	✔	✔
Critical thinking	✔	✔	✔
Student growth	✔	✔	
Problem solving	✔		✔
Content retention	✔		
Reading fluency	✔		
Increased confidence	✔		
Student buy-in		✔	
Design process			✔
Time management			✔

Q43: What are the top skills you would like your students to develop in your class to prepare them for the future?

(n=18)



Note: Teachers identified four categories among 12 choices:
[A) Problem solving; B) Critical thinking; C) Collaboration; D) Understanding the scientific process; E) Perseverance; F) Following directions/listening; G) Conducting research; H) Finding resources/valid data to support project design; I) Communication; J) Presenting research/project to their peers or other audience; K) Organization/project management; L) Enhanced understanding of what it takes to be ready for college and career; M) If other, please describe briefly]

Appendix E:

Post-Implementation Aggregated Data Survey Report

March 30, 2018

Rural LDC Cohort 2 Post-Implementation Survey Preliminary Report

The Rural Collaborative to Improve Instruction and Expand Student STEM Opportunities and 21st Century Skills through Literacy Design Collaborative (LDC)

March 30, 2018

This document provides a preliminary report of survey responses for the LDC Science and Literacy Project 2018 Cohort 1 Post-Implementation Survey. Project districts include: Northwestern Local Schools, Mapleton Local Schools, Hillsdale Local School District, Loudonville-Perrysville Exempted Village Schools, and Black River Local Schools. The Survey was completed by all Cohort 2 teachers (n=18).

The report presents bar charts for survey responses for Qs 1-22, Qs 24-29, Qs 31-32, Qs 35-39, Qs 41-42, and Q44. Open-ended responses (Qs 23, 30, 33, 34, 40 and 43), and questions that provided the option for respondents to select an open-ended "if other" comment will be presented in the final report.

SURVEY PROTOCOL

The Rural Collaborative 2018 Teacher post-implementation survey was administered on Wednesday, March 7th during the Spring 2018 LDC professional development session. The survey was administered via a secure web-based platform (SurveyMethods®) designed for conducting a confidential and anonymous survey. Survey participants were asked to review survey protocols prior to voluntary agreement to participate in the post-implementation survey.

SUMMARY OF SURVEY QUESTIONS AND ISSUES

Q2 is a profile question.

Qs 3-5 are questions regarding teacher's experience with coaching, mentoring, and collaborating with other teachers, specifically during the first year of LDC implementation. Teachers were asked to indicate how important it is to collaborate and share best practices with other teachers, and if they engaged in collaboration with other LDC teachers in any way in the first year of implementation. Teachers were also asked if they engaged in mentoring, coaching other teachers or leading professional development sessions during the 2017-18 school year.

Qs 6-22 are questions regarding teachers' classroom instructional practices during their first year of LDC implementation related to requiring students to conduct research and complete written components of class assignments.

Q23 is an open-ended question asking teachers to briefly describe "design cycle thinking" and whether there are particular benefits for student learning.

Q24 and Q26 asked teachers if they think building administrators and parents were provided sufficient information to understand the LDC Science and Literacy Project.

Q25 and Q27 asked teachers how important is it for administrators and parents to know about and understand the LDC instructional strategies and model.

Qs 28-33 are questions regarding implementation of the LDC module. Q28 asked teachers to describe their first LDC module. Q29 asked teachers how many additional hours they worked beyond the on-site PD days to prepare for the November 21st review session. Q30 is an open-ended question describing the greatest challenge with implementing their first LDC module (fall 2017). Q31 asked teachers to describe their second LDC module. Q32 asked teachers how many additional hours they worked beyond the on-site PD days to prepare for the March 7th review session. Q33 is an open-ended question asking teachers to describe their greatest challenge with implementing their second LDC module (spring 2018).

Qs 34-38 are questions regarding support and communication during the second year of the LDC Project. Q34 is an open-ended question asking teachers what was most helpful to support implementation in their classroom during their first year of the LDC project. Q35-37 provides feedback from teachers on the importance of access to LDC training facilitators and Cohort 1 teachers, as well as on-site coaching during their first year of the LDC Science and Literacy project. Q38 asks teachers to select the top ways they preferred to receive feedback on their LDC modules between PD workshops. Q39 asked teachers to self-evaluate their confidence level in implementing aspects of the LDC instructional model in the classroom.

Q40 is an open-ended question asking teachers to briefly describe any shifts in their instructional approaches that they associate with LDC science instruction in their classroom.

Qs 41-42 asked teachers if they plan to use LDC science modules in the 2018-2019 school year, and if so, do they plan to engage in cross-content collaboration with other teachers.

Q43 is an open-ended question asking teachers to briefly describe observed impacts on student performance associated with LDC instruction in their classroom.

Q44 asked teachers to identify the top three skills they think are most important for students to prepare for the future. Teachers selected from a drop-down menu of skills associated with the LDC instructional model.

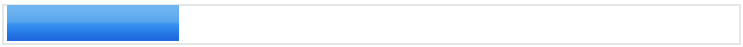
Knowledge Capture: Rural LDC Cohort 2 Post-Implementation Survey

1. This is an anonymous survey. The PAST Foundation will use this survey data to assess your views on the LDC instructional model and will also help inform professional development and ongoing support provided by LDC Coaches. Completing this survey will give you the opportunity to share your views anonymously.

Your participation in this research is voluntary. By checking the response below that states you agree to participate in this survey, you confirm that you have read and understand the consent forms provided to you.

	Responses	Percent
I agree to participate in this anonymous survey: 	18	100%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

2. I currently teach (please choose all that apply):

	Responses	Percent
Grades 5-8: 	14	77.78%
Grades 9-12: 	4	22.22%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

3. In your experience, how important is collaboration and sharing best practices with other teachers?

	Responses	Percent
Very important:	14	77.78%
Somewhat important:	4	22.22%
Not important:	0	0%
I haven't had the opportunity to work collaboratively with other teachers:	0	0%
If other, please describe briefly:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

4. In the 2017-18 year of LDC implementation did you engage in collaboration with other LDC teachers in any way?

	Responses	Percent
Yes:	18	100%
No:	0	0%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

5. During the 2017-18 school year, did you engage in mentoring, coaching other teachers or leading professional development sessions?

	Responses	Percent
Yes:	8	44.44%
No:	10	55.56%
Total Responded to this question:	18	100%
Total who skipped this question:	0	0%
Total:	18	100%

6. During the 2017-18 year of LDC implementation, I required my students to write in-depth explanations about a class project or activity.

	Responses	Percent
Not at all:	0	0%
Once a year:	1	5.88%
Once or twice a semester:	14	82.35%
Monthly:	0	0%
Weekly:	2	11.76%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

7. During the 2017-18 year of LDC implementation, I required my students to use computers or technology to complete an assignment or project.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	4	23.53%
Monthly:	1	5.88%
Weekly:	12	70.59%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

8. During the 2017-18 year of LDC implementation, I assigned reading to my students in addition to the class textbook.

	Responses	Percent
Not at all:	0	0%
Once a year:	1	5.88%
Once or twice a semester:	2	11.76%
Monthly:	6	35.29%
Weekly:	8	47.06%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

9. During the 2017-18 year of LDC implementation, I required my students to compare and contrast information from one text to another.

	Responses	Percent
Not at all:	1	5.88%
Once a year:	2	11.76%
Once or twice a semester:	9	52.94%
Monthly:	4	23.53%
Weekly:	1	5.88%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

10. During the 2017-18 year of LDC implementation, I required my students to produce writing assignments that made them defend their thinking with support and evidence from what they read.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	8	47.06%
Monthly:	8	47.06%
Weekly:	1	5.88%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

11. During the 2017-18 year of LDC implementation, I required my students to orally defend their conclusions from an investigation or project before their peers.

	Responses	Percent
Not at all:	1	5.88%
Once a year:	1	5.88%
Once or twice a semester:	9	52.94%
Monthly:	6	35.29%
Weekly:	0	0%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

12. During the 2017-18 year of LDC implementation, I required my students to use data collected during investigations or projects to justify and defend their conclusions.

	Responses	Percent
Not at all:	0	0%
Once a year:	1	5.88%
Once or twice a semester:	7	41.18%
Monthly:	6	35.29%
Weekly:	3	17.65%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

13. During the 2017-18 year of LDC implementation, I required my students to complete assignments using the vocabulary associated with the subject area being taught.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	0	0%
Monthly:	5	29.41%
Weekly:	12	70.59%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

14. During the 2017-18 year of LDC implementation, I required my students to develop and analyze tables, charts and graphs in schoolwork.

	Responses	Percent
Not at all:	0	0%
Once a year:	1	5.88%
Once or twice a semester:	2	11.76%
Monthly:	11	64.71%
Weekly:	3	17.65%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

15. During the 2017-18 year of LDC implementation, I required my students to work on open-ended problems for which there is no immediately obvious method of solution.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	7	41.18%
Monthly:	6	35.29%
Weekly:	4	23.53%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

16. During the 2017-18 year of LDC implementation, I required my students to work on an extended, major project that lasted one week or more.

	Responses	Percent
Not at all:	0	0%
Once a year:	1	5.88%
Once or twice a semester:	12	70.59%
Once or twice a month:	4	23.53%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

17. During the 2017-18 year of LDC implementation, I required my students to work in cooperative groups to deepen understanding of content.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	3	17.65%
Monthly:	7	41.18%
Weekly:	7	41.18%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

18. During the 2017-18 year of LDC implementation, I required my students to work in groups to complete a written product as a component of a project.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	9	52.94%
Monthly:	6	35.29%
Weekly:	2	11.76%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

19. During the 2017-18 year of LDC implementation, I required my students to take a test that is predominantly essay questions.

	Responses	Percent
Not at all:	3	17.65%
Once a year:	1	5.88%
Once or twice a semester:	11	64.71%
Monthly:	2	11.76%
Weekly:	0	0%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

20. During the 2017-18 year of LDC implementation, I required my students to read science related materials (besides textbooks) and show their understanding through writing.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	10	58.82%
Monthly:	4	23.53%
Weekly:	3	17.65%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

21. During the 2017-18 year of LDC implementation, I required my students to complete a writing assignment that addressed an authentic (real-life) problem in the community or work setting.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	12	70.59%
Monthly:	4	23.53%
Weekly:	1	5.88%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

22. During the 2017-18 year of LDC implementation, I required my students to use science equipment to perform lab activities and use the information (data) collected to complete written assignments in science class.

	Responses	Percent
Not at all:	0	0%
Once a year:	0	0%
Once or twice a semester:	7	41.18%
Monthly:	6	35.29%
Weekly:	4	23.53%
Total Responded to this question:	17	94.44%
Total who skipped this question:	1	5.56%
Total:	18	100%

23. Briefly describe "design cycle thinking" and if you think there are particular benefits for student learning.

	Responses	Percent
Responses:	15	100%
Total Responded to this question:	15	83.33%
Total who skipped this question:	3	16.67%
Total:	18	100%

[Open-ended response analysis will be presented in the final report.]

24. During the 2017-18 year of LDC implementation do you think that your building administrators were provided sufficient information to understand the LDC Science and Literacy Project?

	Responses	Percent
Yes:	8	50%
No:	3	18.75%
I don't know:	5	31.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

25. How important is it for your building administrators to understand the LDC instructional strategies that you implemented in your classroom this year?

	Responses	Percent
Very important:	9	56.25%
Somewhat important:	4	25%
Not important:	0	0%
I don't know yet:	1	6.25%
If other, please describe briefly:	2	12.5%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

["If other" responses presented in the final report.]

26. During the 2017-18 year of LDC implementation do you think that parents were provided sufficient information to understand the LDC Science and Literacy Project?

	Responses	Percent
Yes:	1	6.25%
No:	12	75%
Not applicable:	3	18.75%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

27. How important is it for parents to understand the LDC model for science literacy and learning?

	Responses	Percent
Very important:	3	18.75%
Somewhat important:	8	50%
Not important:	2	12.5%
I don't know yet:	2	12.5%
If other, please describe briefly:	1	6.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

["If other" responses presented in the final report.]

28. How would you describe your first LDC module (fall 2017)?

	Responses	Percent
I think the science and literacy teaching task was well designed and I had a quality instructional plan which I immediately implemented with my students ("Good to go").:	5	31.25%
I think the science and literacy teaching task was well designed and my instructional plan was pretty close. It allowed me to begin implementation immediately with my students, but I modified the module as I went along ("Work-in-progress").:	6	37.5%
I needed to work on both my science and literacy teaching task and my instructional plan before I began implementation with my students ("Work-in-progress").:	5	31.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

29. Beyond the on-site PD days, how many additional hours did you work to prepare for evaluating student work on November 21st?

	Responses	Percent
1-5 hours:	2	12.5%
6-10 hours:	5	31.25%
11-15 hours:	3	18.75%
15+ hours:	5	31.25%
If other, please describe briefly:	1	6.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

["If other" responses presented in the final report.]

30. What was your greatest challenge with implementing your first LDC module (fall 2017)?

	Responses	Percent
Responses:	16	100%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

[Open-ended response analysis will be presented in the final report.]

31. How would you describe your second LDC module (spring 2018)?

	Responses	Percent
I think the science and literacy teaching task was well designed and I had a quality instructional plan which I immediately implemented with my students ("Good to go").:	6	37.5%
I think the science and literacy teaching task was well designed and my instructional plan was pretty close. It allowed me to begin implementation immediately with my students, but I modified the module as I went along ("Work-in-progress").:	8	50%
I needed to work on both my science and literacy teaching task and my instructional plan before I began implementation with my students ("Work-in-progress").:	2	12.5%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

32. Beyond the on-site PD days, how many additional hours did you work to prepare for evaluating student work on March 7th?

	Responses	Percent
1-5 hours:	3	18.75%
6-10 hours:	5	31.25%
11-15 hours:	2	12.5%
15+ hours:	5	31.25%
If other, please describe briefly:	1	6.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

["If other" responses presented in the final report.]

33. What was your greatest challenge with implementing your second LDC module (spring 2018)?

	Responses	Percent
Responses:	16	100%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

[Open-ended response analysis will be presented in the final report.]

34. During the 2017-18 year of the LDC Project, what aspect of your experience was the most helpful to you to support LDC module implementation in your classroom? (For example: working with Cohort 1 teachers, using Cohort 1 LDC modules, good support from your administrators, etc.)

	Responses	Percent
Responses:	15	100%
Total Responded to this question:	15	83.33%
Total who skipped this question:	3	16.67%
Total:	18	100%

[Open-ended response analysis will be presented in the final report.]

35. How important was it to you to have ongoing access to LDC training facilitators in your first year of implementation of the LDC Science and Literacy project?

	Responses	Percent
Very important:	9	56.25%
Somewhat important:	4	25%
Not important:	2	12.5%
I don't know yet:	0	0%
Not applicable:	0	0%
If other, please describe briefly:	1	6.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

[“If other” responses presented in the final report.]

36. How important was it to you to have ongoing access to Cohort 1 teachers in your first year of implementation of the LDC Science and Literacy project?

	Responses	Percent
Very important:	7	43.75%
Somewhat important:	6	37.5%
Not important:	2	12.5%
I don't know yet:	0	0%
Not applicable:	0	0%
If other, please describe briefly:	1	6.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

[“If other” responses presented in the final report.]

37. How important was it for you to have on-site coaching (High Schools that Work, Cohort 1 teachers) in your building during the fall 2017 and spring 2018 to support implementation of LDC modules in your classroom?

	Responses	Percent
Very important:	5	31.25%
Somewhat important:	5	31.25%
Not important:	0	0%
I don't know yet:	1	6.25%
Not applicable:	0	0%
If other, please describe briefly:	5	31.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

[“If other” responses presented in the final report.]

38. Please select the ways you preferred to receive feedback on your LDC modules between PD workshops.

	Responses	Percent
Comments posted directly on CoreTools:	5	31.25%
Via email:	16	100%
During the school day, on-site coach visit to my classroom:	5	31.25%
During the school day, in a virtual meeting (skype, zoom, etc.):	1	6.25%
During prep period, by phone:	2	12.5%
During prep period, on-site coach visit to my classroom:	5	31.25%
During prep period, in a virtual meeting (skype, zoom, etc.):	1	6.25%
After school, by phone:	1	6.25%
After school, on-site coach visit to my classroom:	2	12.5%
After school, in a virtual meeting (skype, zoom, etc.):	0	0%
During the weekend, by phone:	1	6.25%
During the weekend, in a face-to-face meeting:	0	0%
During the weekend, in a virtual meeting (skype, zoom, etc.):	0	0%
Not applicable:	0	0%
If other, please describe briefly:	0	0%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

39. How confident are you in your understanding and ability to implement the following components of the LDC instructional model?

	Very confident	Confident	Somewhat confident	Not confident	I don't know	Total
Construct an authentic science and literacy assignment [teaching task]:	3(18.75%)	9(56.25%)	4(25%)	0(0%)	0(0%)	16
Identify a focus set of science standards to drive the assignment:	5(31.25%)	7(43.75%)	3(18.75%)	1(6.25%)	0(0%)	16
Identify a focus set of common core literacy standards to drive the assignment:	4(25%)	7(43.75%)	4(25%)	1(6.25%)	0(0%)	16
Select complex and content rich text(s) that align to a specific set of student learning goals:	4(25%)	8(50%)	3(18.75%)	1(6.25%)	0(0%)	16
Select a student work product that is relevant to the student learning goals of the assignment:	3(18.75%)	8(50%)	5(31.25%)	0(0%)	0(0%)	16
Develop a quality instructional plan:	3(18.75%)	9(56.25%)	4(25%)	0(0%)	0(0%)	16
Backward-design a sequence of skills from the assignment aligned to student learning goals:	2(12.5%)	10(62.5%)	3(18.75%)	1(6.25%)	0(0%)	16
Develop instruction that allows students to demonstrate the skills needed to meet the expectations of the assignment:	4(25%)	9(56.25%)	2(12.5%)	1(6.25%)	0(0%)	16
Develop instruction that allows for ongoing checks (scoring guide) for understanding student skill development:	2(12.5%)	7(43.75%)	7(43.75%)	0(0%)	0(0%)	16
Navigate LDC CoreTools:	1(6.25%)	7(43.75%)	5(31.25%)	3(18.75%)	0(0%)	16
Collaborate with other LDC project teachers:	3(18.75%)	6(37.5%)	4(25%)	3(18.75%)	0(0%)	16

Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%

Total:	18	100%

40. Please describe any shifts in your instructional approaches that you associate with LDC science instruction in your classroom.

	Responses	Percent
Responses:	14	100%
Total Responded to this question:	14	77.78%
Total who skipped this question:	4	22.22%
Total:	18	100%

[Open-ended response analysis will be presented in the final report.]

41. Do you plan to use LDC science modules in the 2018-2019 school year?

	Responses	Percent
Yes:	9	56.25%
No:	3	18.75%
I don't know:	2	12.5%
If other, please describe briefly:	2	12.5%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

[“If other” responses presented in the final report.]

42. If you do plan to use LDC science modules in the 2018-2019 school year, do you plan to engage in cross-content collaboration with other teachers?

	Responses	Percent
Yes:	4	25%
No:	5	31.25%
I don't know:	6	37.5%
If other, please describe briefly:	1	6.25%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%

[“If other” responses presented in the final report.]

43. Briefly describe any impacts on student performance that you observed this year associated with LDC instruction in your classroom.

	Responses	Percent
Responses:	13	100%
Total Responded to this question:	13	72.22%
Total who skipped this question:	5	27.78%
Total:	18	100%

[Open-ended response analysis will be presented in the final report.]

44. What are the *top THREE skills* you think your students developed to help prepare them for the future as a result of LDC instruction? Please remember to choose *ONLY THREE* of the following options.

	Responses	Percent
Problem solving:	11	68.75%
Critical thinking:	10	62.5%
Collaboration:	10	62.5%
Understanding the scientific process:	1	6.25%
Perseverance:	5	31.25%
Following directions/listening:	1	6.25%
Conducting research:	3	18.75%
Finding resources/valid data to support project design:	1	6.25%
Communication:	2	12.5%
Presenting research/project to their peers or other audience:	1	6.25%
Organization/project management:	3	18.75%
Enhanced understanding of what it takes to be ready for college and career:	0	0%
If other, please describe briefly:	0	0%
Total Responded to this question:	16	88.89%
Total who skipped this question:	2	11.11%
Total:	18	100%