IES Institute of Education Sciences

REL Appalachia at SRI International

Implementing an Improvement Initiative: Strategies and Tools to Hit the Ground Running and Go the Distance

Participant Workbook

Regional Educational Laboratory Appalachia at SRI International

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Contents

Continuous Improvement at Deer View High School

This workbook was developed for participants at the fall 2020 National Rural Education Association (NREA) National Forum to Advance Rural Education session hosted by REL Appalachia. The set of activities in this workbook provide an example of how a fictional high school, Deer View High School (DVHS), implemented the five-phase continuous improvement process. DVHS has the following characteristics:

- DVHS is a small, rural school district with one comprehensive high school, a technical school, one middle school, and four elementary schools.
- DVHS has 575 students across grades 9–12, where 67 percent of the students qualify for the National School Lunch Program.
- DVHS offers two Advanced Placement courses, extracurricular clubs, and sports.

Activity 1: Deer View High School Data Review

DVHS staff are concerned that many students are unprepared to transition successfully to postsecondary education or training, so the principal convened a group of teachers to examine data and identify the school's problem of practice.

Directions: Individually examine the data plots below and jot down descriptive statements and potential questions that these data bring to mind in the table on page 6. We'll discuss your descriptive statements and questions together as we work toward identifying a problem of practice at DVHS.

Reviewing the data

The following charts present data about DVHS graduation rates, post-high-school plans, state assessments, Advanced Placement courses, and student attendance.

Figure 1. DVHS Graduation rates

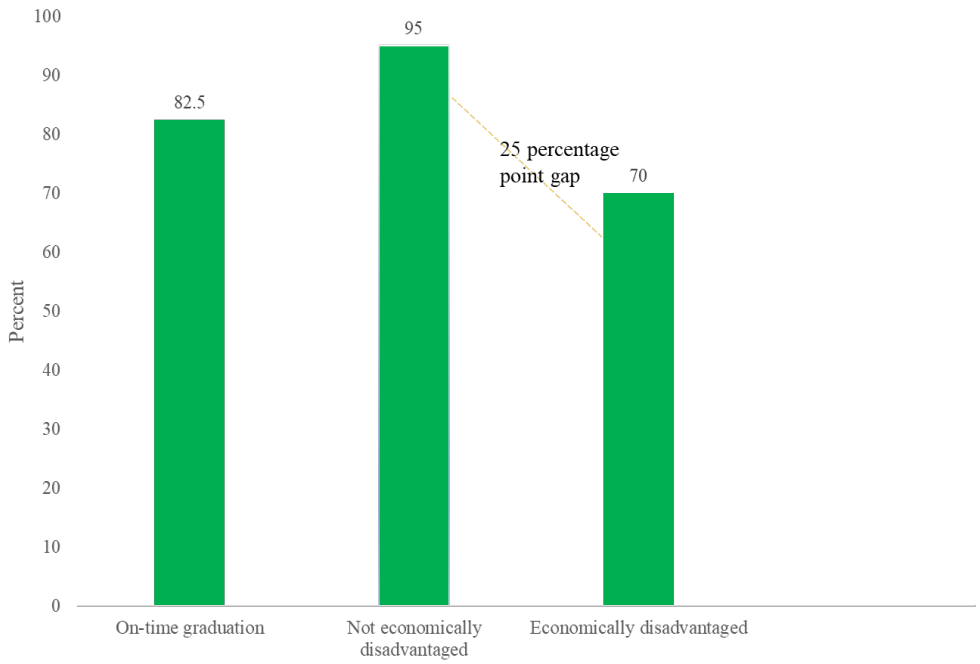


Figure 2. Post-high school plans of DVHS seniors

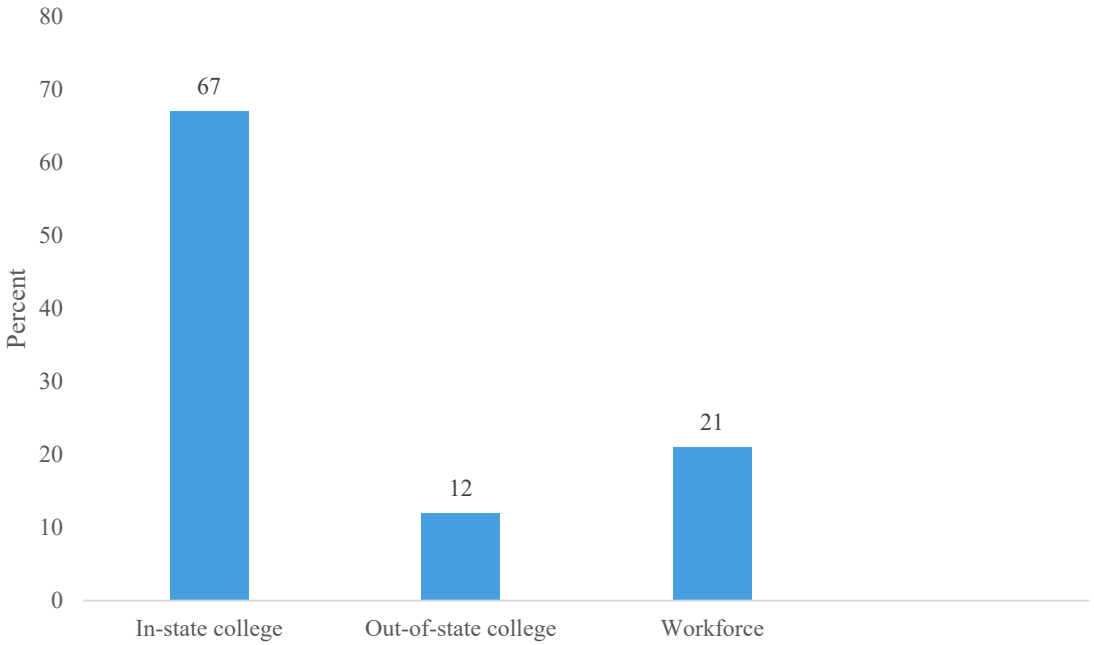


Figure 3. State assessment proficiency rates by course

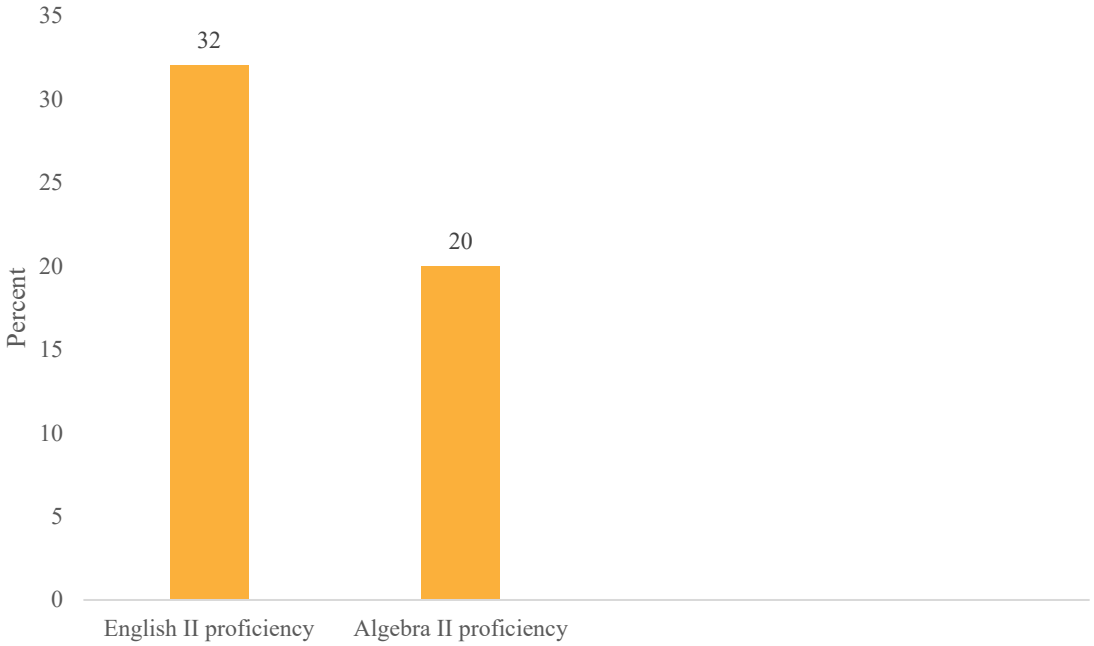


Figure 4. Advanced Placement enrollment and passing rates

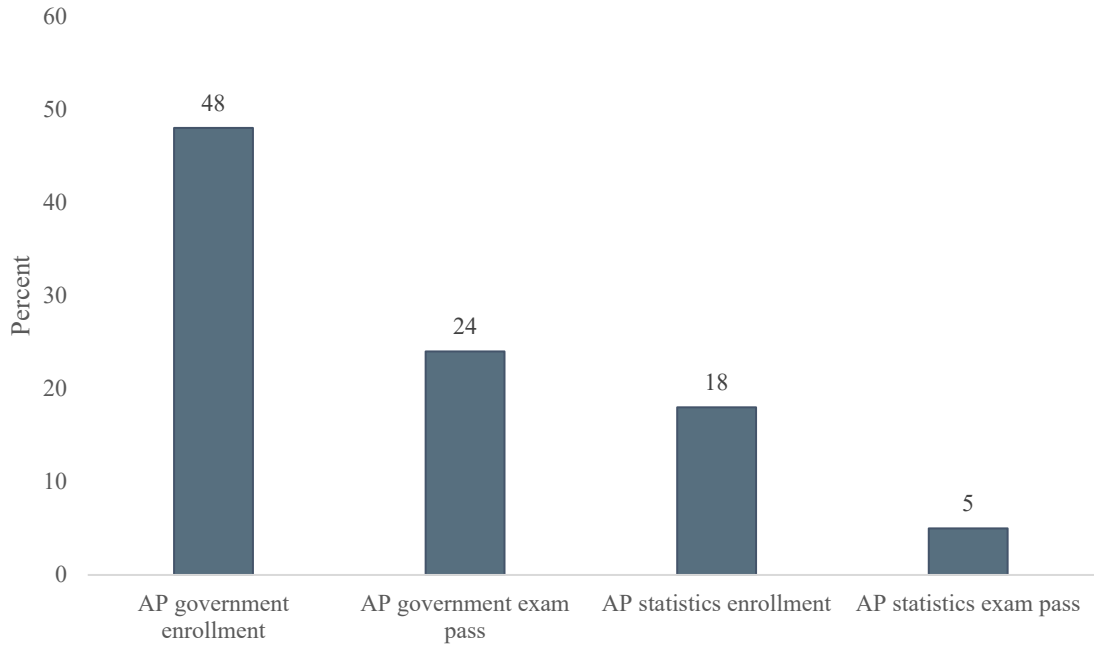
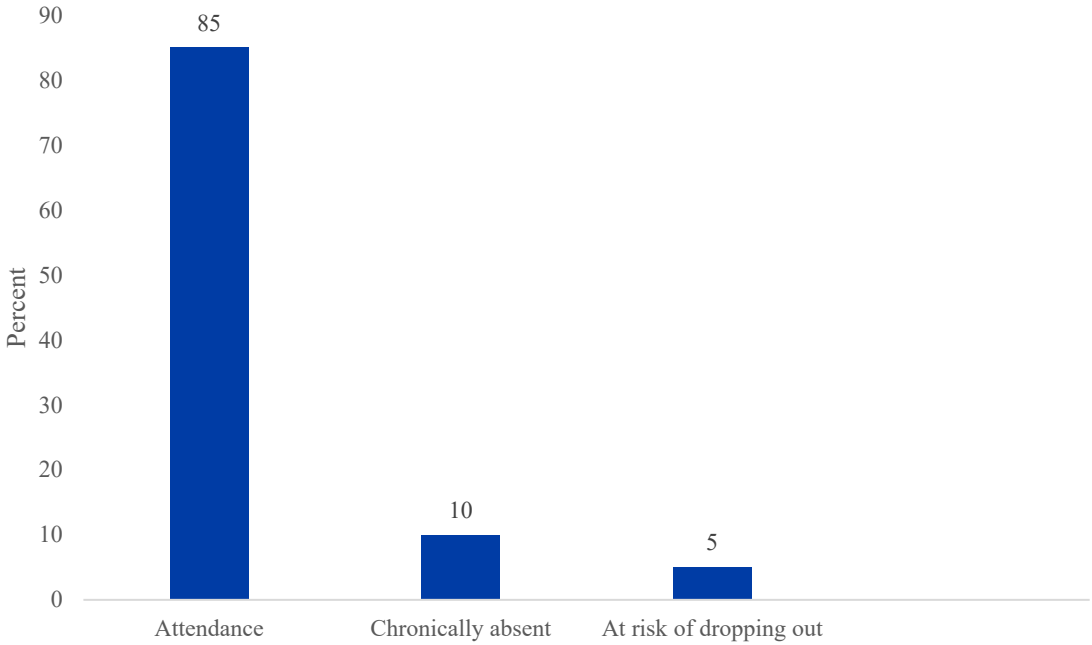


Figure 5. School attendance rates and dropout risk



The school counselor also compiled available student survey data to help the team gain a better understanding of student experiences at DVHS. Below are responses from an exit survey for graduating seniors and from an end-of-year survey of grade 9 students.

Figure 6. Grade 12 student perceptions: Readiness for postsecondary courses

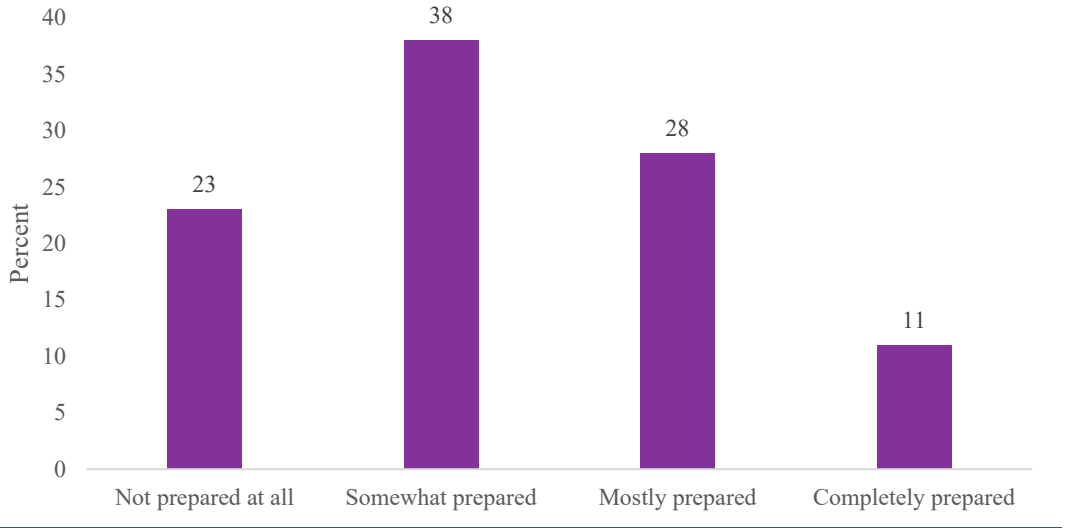
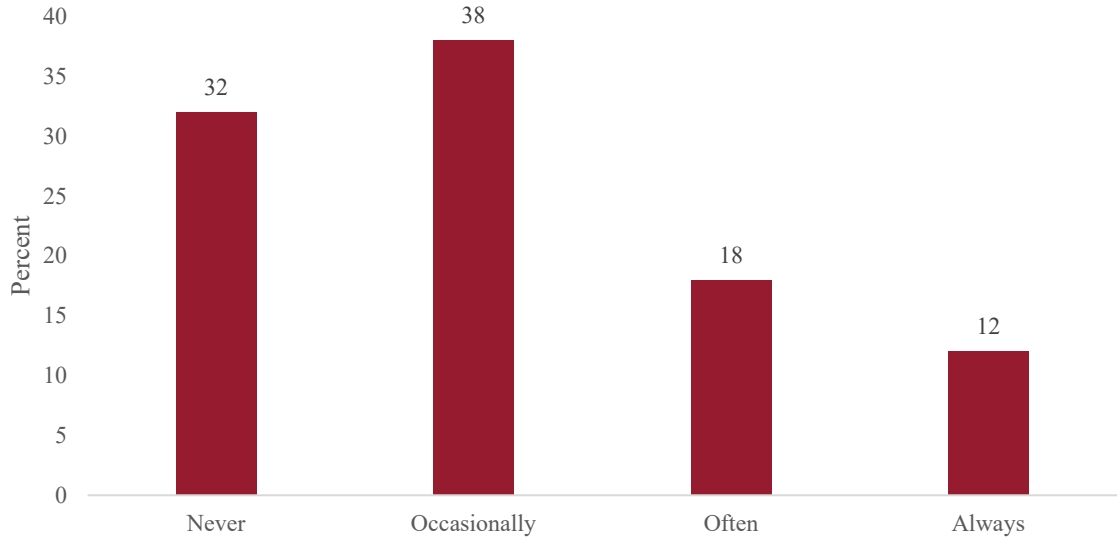


Figure 7. Grade 9 student perceptions: Willingness to seek academic assistance



Think and discuss

Jot down your thoughts in the appropriate column.

Statements that describe the data	Questions these data bring to mind

Discussion questions

1. Considering all data presented, what data were most useful? What other data might be needed?

2. Based on the available data, what problem(s) of practice should be considered as focus area(s) for improvement?

Activity 2: Root-Cause Analysis Using the Five Whys Process

The *Five Whys* template[1] guides improvement teams to dig into perceived problems and consider why the current system produces undesired outcomes. When digging into root causes, it's important to keep discussions focused on reasons within a school's control (for example, school policies, procedures, instructional practices) rather than on reasons beyond the school's purview (for example, student characteristics or family background). Although many variables affect student outcomes, staying focused on what the school can control offers a viable path to improvement. We'll begin our work with a question identified during the DVHS data review.

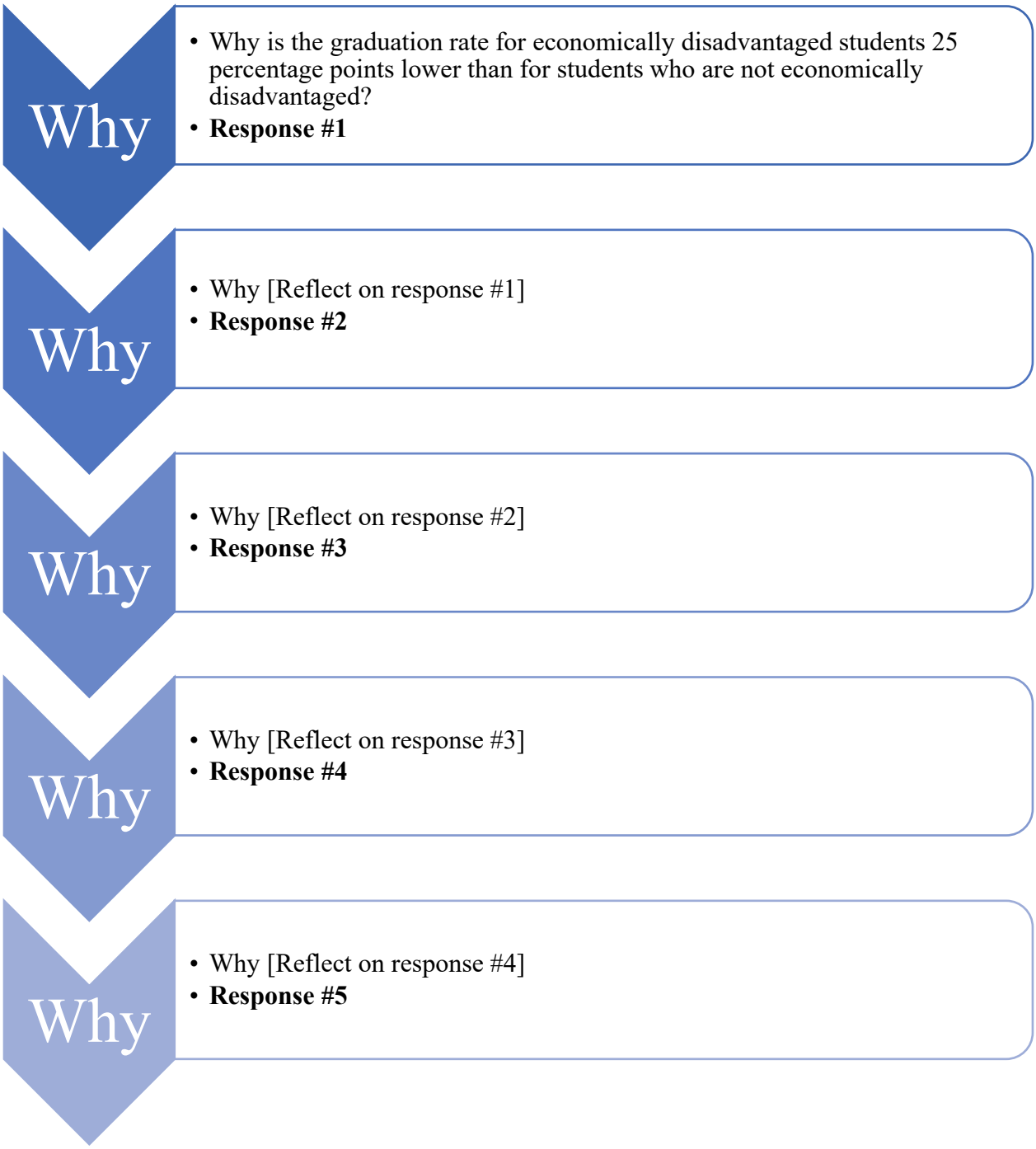
Directions: Use the question at the top of the Five Whys template on the next page as the starting point for a root cause analysis. Dig deeper into the problem by asking "why" for each of the four remaining responses. Once you have had a few minutes to think independently, we'll bring everyone together to reflect on the *Five Whys* process.

Reflection questions:

- How did the use of the *Five Whys* change your perception of the problem?
- How might this process help a district/school team to more objectively and accurately identify a problem?
- How did the use of the *Five Whys* ultimately change your problem statement?

[1] Template adapted from R. Silverstein and G. Hewitt (2014), Root cause analysis: How adaptive leaders use root cause analysis to collaboratively solve student achievement needs, PowerPoint slides, REL Mid-Atlantic, https://ies.ed.gov/ncee/edlabs/regions/midatlantic/Docs/technicalassistance/Root%20Cause%20Analysis%20Webinar-4-23-14_508c.pdf

Figure 8. Five Whys template



Activity 3: Deer View High School Interview Notes for Implementation Checkpoints

Ms. Hale, the school-improvement specialist from the district-level central office, interviewed three DVHS teachers individually to ask about their use of formative assessment in their geometry classes. Ms. Hale asked the teachers about the formative assessment professional development (PD) and how they learned to clarify and communicate learning expectations to students and motivate students to understand why learning the unit content is important. Below are excerpts from the teacher interviews; "I" stands for the interviewer, Ms. Hale; "T" stands for the teacher being interviewed.

Directions: Select an excerpt from one teacher interview to read. As you read, highlight evidence that the teacher learned how to clarify and communicate learning expectations to students, and that the teacher learned how to motivate students to understand why learning the unit content is important.

Once you have finished reading and highlighting, start jotting down observations on page 14. Together, we'll discuss all your ideas and identify general themes.

Ms. Neal – Interview excerpt

I: So I know you are the chair of the math department here at Deer View. You've been at Deer View for about six years, right?

T: Yeah. I became the math chair two years ago, so I'm fairly new to being a chair. We are a pretty tight team of teachers in the math department.

I: So how was the formative assessment professional development for you?

T: You know, I started as a special education teacher 10 years ago. And then I switched over to teach math specifically six years ago, when I started at Deer View. So that special education background really helped with learning about formative assessment. Using the geometry textbook, the units clearly provide the learning objectives for each lesson. But the formative assessment professional development reminded me to actually tell my students what they will learn—like their learning objectives, so they are on the same page with me as a partnership. When you get so focused on teaching math, you can forget to tell them what they are going to learn!

I: Yeah, it can be overwhelming sometimes to teach with so many things to keep track of.

T: Right! But what I learned from the formative assessment professional development was to not just regurgitate the learning objectives from the textbook. It was really important to make it student-friendly, you know what I mean? Like, to help them understand why, like, congruent triangles and learning about the theorem is important. What careers would use geometry. I try really hard, especially since I have 10th-grade students, to link the learning objectives to careers so kids can feel a connection and usefulness to what they are learning in math. So the formative assessment professional development reminded me that I not only have to explicitly state what students will learn but communicate it in a way that motivates the students on why they should learn it.

Mr. Knowles – Interview excerpt

I: This must be your, hmmm, is it going on 20 years at Deer View? You must have seen it all while you've been teaching math here, huh?

T: I've been through at least 12 different math textbooks, four different state standards and assessments, and I've even been through six different principals here! That said, I was a math major in college, where math is math. There may be different standards and textbooks, but it's still just math.

I: So how was the formative assessment professional development for you?

T: It made sense. You want to know where your students are in learning math. I feel like the professional development validated what I've always done, which is do a lot of quizzes for my students. Each quiz is worth 10 percent of their grade, and then there's a final exam worth 20 percent. So that means that my students would be taking eight different quizzes during the year.

I: Going back to the formative assessment professional development, how do you think the professional development helped you clarify and communicate learning expectations to your students?

T: Well, I think I've always been doing that with telling them about the quizzes coming up and what the topic of the quizzes are. Like, coming up, the kids have a quiz on congruent triangles.

I: Okay. How about with the formative assessment professional development, how do you think the professional development helped you to motivate students to understand the importance of the unit, say in congruent triangles?

T: Well, there's nothing more motivating than getting a good grade. And so I think doing quizzes is naturally motivating for students to get a good grade. I do give the kids opportunities to improve their grade by either retaking the whole quiz for a new grade or redoing the questions they got wrong for half a credit.

Ms. Riddell – Interview excerpt

I: It's so nice to meet you! How are you liking this area and teaching at Deer View? You started last year, right?

T: Thanks! Nice to meet you too! Yeah, I just finished college and I wanted to come back to my community in this area. It's like coming home. So obviously, I like this area because I came back!

I: So how was the formative assessment professional development for you?

T: It was fun because it felt like I was back in college learning how to be a teacher. I remember learning about this during my student teaching days, too. During my student teaching, I tried doing formative assessment with things like student emails or Google forms. But it's funny how, despite all the available technology, my mentor teacher helped me realize it would be easiest to just use Post-it notes during class. So with the formative assessment professional development, it was like learning it all over again.

I: That's nice to have that doubleheader of training in formative assessment. How do you think the professional development helped you clarify and communicate learning expectations to your students?

T: Well, the textbook we use makes it really easy. Each unit tells you what the learning target is. So I just have to remember to tell my students. Sometimes, I forget because you get so caught up in classroom management that I don't feel like I get to all the geometry content. I need to work on that. Talk about Post-it notes! I have Post-it notes in my classroom to help me remember to tell my students, to communicate the learning targets for each class. What I try to do too, because I would say that math didn't always come easy for me when I was their age…I try to make math fun. Like, it's a way of making things or building things.

Data observations

Use the space below to jot down general observations about the interview data.

- Is there evidence that shows the teacher learned how to clarify and communicate learning expectations to students?
- Is there evidence that shows the teacher learned how to motivate students to understand why learning the unit content is important?

Activity 4: Deer View High School Lesson Plans for Outcome Data

Ms. Hale, the school-improvement specialist, reviewed 15 lesson plans from the three geometry teachers (for a total of 45 lesson plans). She used a spreadsheet to code whether the teacher lesson plans includes ways to adjust instruction based on student exit tickets from the day before: Yes = Lesson plan is responsive to exit ticket data; No = Lesson plans is not responsive to exit ticket data.

Directions: Review the summary of lesson plan findings and record your observations on page 16. As you review, consider how you might describe implementation of formative assessment practices by these three teachers.

	Week 1					Week 2					Week 3					Summary
	1 Oct	2 Oct	3 Oct	4 Oct	5 Oct	25 Oct	26 Oct	27 Oct	29 Oct	30 Oct	15 Nov	16 Nov	17 Nov	18 Nov	19 Nov	
Neal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	100% of the time (15 out of 15)
Knowles	Yes	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	No	20% of the time (3 out of 15)
Riddell	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	60% of the time (9 out of 15)

Data observations

Use the space below to jot down general observations about the lesson plan data.

- How might you describe implementation of formative assessment practices by these three teachers?

Bringing it all together: Reporting results

Review your observations of the interview data and lesson plan data from page 14 and 16, and then connect those observations to the predictions the DVHS improvement team made during their *plan* phase. In the template[2] below, record the actual occurrences (what happened during implementation) in the last column. What were differences between the initial predictions and actual occurrences?

Figure 9. "Study" — data organizer template

List the action steps: [From plan phase]		***Make prediction: [From plan phase]***	***Study actual occurrence: [From study phase]***
Target person	Action steps	Predict change	Report results from data
Geometry teachers: Mr. Knowles Ms. Riddell Ms. Neal	[PD Focus: Where am I going?] 1. Teachers will learn how to clarify and communicate learning expectations to students. 2. Teachers will learn how to motivate students to understand why unit content is important to learn.	Teachers will easily learn how to clarify and communicate learning expectations. All lesson plans, for all three teachers, should reflect this at the start of their lesson. This should be review for teachers.	
Geometry teachers: Mr. Knowles Ms. Riddell Ms. Neal	[PD Focus: Where am I now?] 3. Teachers will learn how to gather evidence of student thinking. 4. Teachers will learn how to probe student thinking.	Teachers will first use student quizzes as evidence of student learning. Through the professional development, teachers will be able to use daily exit tickets to understand student metacognition.	
Geometry teachers: Mr. Knowles Ms. Riddell Ms. Neal	[PD Focus: Where to next?] 5. Teachers will learn how to use formative assessment feedback to adjust lesson plans and instructional approaches the next day.	Teachers will be able to adjust their lesson plan daily by using the evidence (exit tickets).	

[2] Template adapted from Cherasaro, T. L., Reale, M. L., Haystead, M., & Marzano, R. J. (2015). Instructional improvement cycle: A teacher's toolkit for collecting and analyzing data on instructional strategies (REL 2015–080). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. http://ies.ed.gov/ncee/edlabs

Activity 5: Deer View High School Discussion Protocol Questions

DVHS implemented the formative assessment practices, and the improvement team studied the findings. They are now ready to reflect on what they learned from the initial implementation of formative assessment practices and determine how to adjust implementation to attain their desired outcomes.

Directions: Resist the urge to start planning next steps right away, and instead start by focusing on identifying what you learned from the implementation process. Use the following discussion protocol to discuss what worked well, did not work well, and other insights. After discussing what you learned from this process, we will review the next steps identified by the DVHS improvement team on page 20.

Discussion protocol

1. What **insights** do you have?

   - What worked well? (Align with data)

   - What did not work well? (Align with data)

- What were unexpected insights? (Align with data)

2. What are **new learnings**?

I used to think . . .	Now I know . . .

Figure 10. "Act" — data organizer template

List the action steps: [From plan phase]		***Make prediction: [From plan phase]***	***Study actual occurrence: [From study phase]***	***Identify new learnings:***
Target person	Action steps	Predict change	Report results from data	Revise and improve action steps
Geometry teachers: Mr. Knowles Ms. Riddell Ms. Neal	[PD Focus: Where am I going?] 1. Teachers will learn how to clarify and communicate learning expectations to students. 2. Teachers will learn how to motivate students to understand why unit content is important to learn.	Teachers will easily learn how to clarify and communicate learning expectations. All (3 out of 3) lesson plans should reflect this at the start of their lesson. This should be review for teachers.	2 out of 3 teachers reviewed and identified clarifying questions [Data source: Meeting notes and teacher interviews]	Try out group discussion and "lesson plan study" during PLC meeting to get 100 percent of teachers to understand how to communicate and clarify learning expectations.
Geometry teachers: Mr. Knowles Ms. Riddell Ms. Neal	[PD Focus: Where am I now?] 3. Teachers will learn how to gather evidence of student thinking. 4. Teachers will learn how to probe student thinking.	Teachers will first want to use student quizzes as evidence of student learning. Through professional development, teachers will be able to use daily exit tickets to understand student metacognition.	100% of teachers included exit tickets in the lesson plan at the beginning **but not throughout the course of the unit.** Teachers reported more time needed to revise their lesson plans **every day**. [Data source: Review of teacher lesson plans for week of 10/25/20]	We need to identify ways to find time for our geometry teachers to work on lesson plans. The implementation team should host a meeting with the geometry teachers to discuss this, hearing their ideas for ways to find more time, as any solutions need their support. ** Consider sustainability and burnout.
Geometry teachers: Mr. Knowles Ms. Riddell Ms. Neal	[PD Focus: Where to next?] 5. Teachers will learn how to use formative assessment feedback to adjust lesson plans and instructional approaches the next day.	Teachers will be able to adjust their lesson plan daily by using the evidence (exit tickets).	1 teacher consistently identified concepts/skills daily. 2 teachers identified concepts/skills at the beginning of the unit and the end of the unit. Teachers are not consistent with identifying and including concepts/ skills in formative assessment **every day.** [Data source: Review of teacher lesson plans for week of 11/15/20]	We need to identify appropriate professional development to build teachers' skills related to learning goals including concepts and skills related to formative assessment. Then, we need to offer our geometry teachers professional development as soon as possible. ** Consider and discuss more professional development or trying out formative assessment in one classroom at a time. Teachers seem overwhelmed and need more small-scale practice.

Activity 6: Deer View High School Next Steps, Adjustments, and Improvements

The DVHS team deconstructed their learnings based on their data analysis. The team then decided on revisions to their plan based on their analysis and made concrete decisions about next steps.

Directions: Review the DVHS reflections on their decisionmaking process template[3] on page 22. We will discuss the process they used to determine the next steps, and the activities they are planning to explore.

[3] Template adapted from T. L.Cherasaro, M. L. Reale, M. Haystead, and R. J. Marzano (2015), Instructional improvement cycle: A teacher's toolkit for collecting and analyzing data on instructional strategies (REL 2015–080), Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central, http://ies.ed.gov/ncee/edlabs

Figure 11. "Act" phase — reflection template

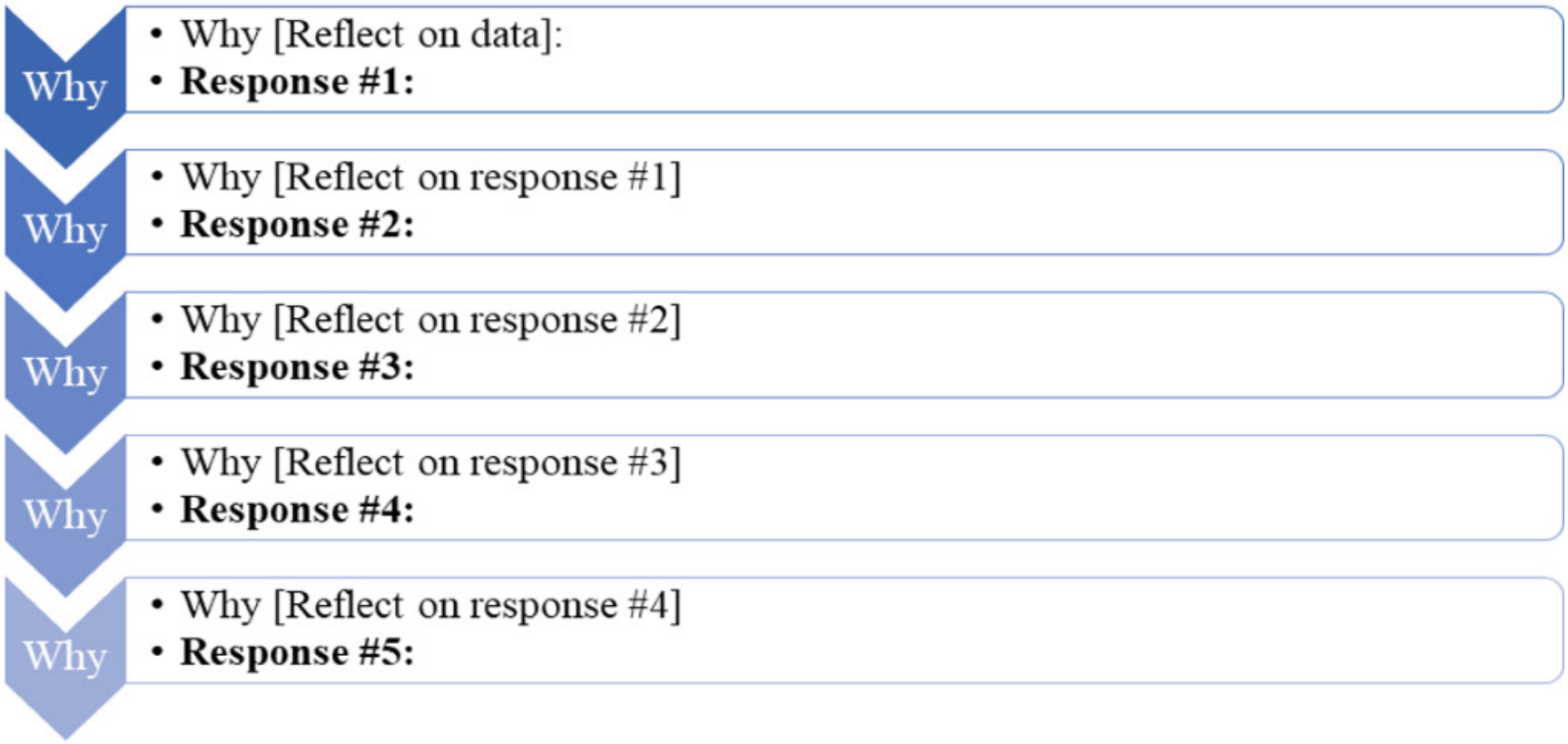
What did we learn when we studied the data and information?
In spite of teachers' comfort, confidence, and enthusiasm for adding formative assessment to their teaching practices, they did not all do so consistently over the course of the cycle.
Teachers need more time to incorporate formative assessment into all lesson plans.
Teachers' inconsistency in identifying and including concepts/skills in formative assessment and updating lesson plans daily suggests a need for more professional development.
What revisions should we make to our activities and/or predictions?
We need to revise the expectation for daily revisions to lesson plans, as that frequency may be unrealistic. Instead, we propose weekly revisions to lesson plans. *Rationale: We need our teachers to be able to meet the expectations; failure to meet expectations over and over will result in defeat and eventually teachers will give up. If they meet the expectation and begin to see how it contributes to improved student learning, they will be more likely to want to engage more deeply and find ways to incorporate changes daily.* *We need to offer professional development related to formative assessment.* *We need to offer geometry teachers more time for lesson planning.*
What are our immediate next steps?
We need to update the planning template to scale back our expectations for daily revisions to lesson plans and communicate the changes to the geometry teachers.
What are our longer-term next steps?
We need to identify appropriate professional development to build teachers' skills in setting student learning goals and incorporating formative assessment concepts in lessons. Then, we need to offer our geometry teachers this expanded professional development as soon as possible.
We need to give our geometry teachers more time to work on lesson plans. The implementation team should host a meeting with the geometry teachers to discuss this, hearing their ideas for ways to find more time, as any solutions need their support.

Appendix A: Tools and Templates

This appendix contains tools and templates were introduced during this session to facilitate the continuous improvement process; they can be modified to meet your needs.

Phase 1: "Set the foundation" — *Five Whys* template

Directions: Review various data from your school or district. Start by looking at an outcome that is important to the success of your school. For example, in high schools, the outcome of concern is often the high school graduation rate and the number of students who graduate college- and career-ready. Reflect on those data and ask, "Why am I seeing these results?" Write in your response. Choose another important outcome. Go through the *Why* process five times.



Template adapted from Silverstein, R., & Hewitt, G. (2014). Root cause analysis: How adaptive leaders use root cause analysis to collaboratively solve student achievement needs. [PowerPoint slides]. REL Mid-Atlantic. https://ies.ed.gov/ncee/edlabs/regions/midatlantic/Docs/technicalassistance/Root%20Cause%20Analysis%20Webinar-4-23-14_508c.pdf

Phase 1:"Set the foundation" — theory of action template

Problem statement:

Inputs	Evidence-based practices to improve _____	Short-term outcomes
		Mid-term outcomes
		Long-term outcomes

Template adapted from Shakman, K., & Rodriguez, S. M. (2015). Logic models for program design, implementation, and evaluation: Workshop toolkit (REL 2015–057). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands. http://ies.ed.gov/ncee/edlabs

Phase 2: "Plan" — action plan template

List the action steps:				***Identify data to monitor:***		***Make predictions:***
[WHO] Target person	**[WHAT]** Action steps	**[WHEN]** Start/end	**[WHERE]** Location	**[HOW]** Implementation	**[HOW]** Outcomes	**[WHY]** Predict change, *where applicable*
	1.					
	2.					
	3.					
	4.					
	5.					
	6.					
Notes:						

Template adapted from Collis, S., & Foster, K. (2018, March 7). TIME for Care: Quality improvement for practice managers [PowerPoint Slides]. SlideShare. https://www.slideshare.net/NHSEngland/improving-services-leading-change-implementing-change-in-rapid-cycles

Phase 3: "Do" — data organizer template

Identify data to monitor: [From plan phase]	*Monitor your data:*	
Description of data [List implementation checkpoints and outcome data from action plan template]	**Who will collect data?** [Name of person responsible for collecting and storing data]	**Date of data collected** [The date the data were collected, including multiple time points]
Implementation checkpoints		
1.		
2.		
3.		
Outcome data		
1.		
2.		
3.		
Notes:		

Template adapted from Collis, S., & Foster, K. (2018, March 7). TIME for Care: Quality improvement for practice managers [PowerPoint Slides]. SlideShare. https://www.slideshare.net/NHSEngland/improving-services-leading-change-implementing-change-in-rapid-cycles

Phase 4: "Study" — data organizer template

List the action steps: [From plan phase]		*Make predictions: [From plan phase]*	*Study actual occurrences:*
[WHO] Target person	**[WHAT]** Action steps	**[WHY]** Predict change	**[WHAT HAPPENED]** Report results from data
	1.		
	2.		
	3.		
	4.		
	5.		
	6.		
Notes:			

Template adapted from Cherasaro, T. L., Reale, M. L., Haystead, M., & Marzano, R. J. (2015). Instructional improvement cycle: A teacher's toolkit for collecting and analyzing data on instructional strategies (REL 2015–080). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. http://ies.ed.gov/ncee/edlabs

Phase 5: " Act" — data organizer template

List the action steps: [From plan phase]		*Make prediction: [From plan phase]*	*Study actual occurrence: [From study phase]*	*Identify new learnings:*
[WHO] Target person	**[WHAT]** Action steps	**[WHY]** Predict change	**[WHAT HAPPENED]** Report results from data	**[WHAT NEXT?]** Revise and improve action steps
	1.			
	2.			
	3.			
	4.			
	5.			
	6.			
Notes:				

Template adapted from Cherasaro, T. L., Reale, M. L., Haystead, M., & Marzano, R. J. (2015). Instructional improvement cycle: A teacher's toolkit for collecting and analyzing data on instructional strategies (REL 2015–080). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. http://ies.ed.gov/ncee/edlabs

Phase 5: "Act" — reflection template

What did we learn when we studied the data and information?
What revisions should we make to our activities and/or predictions?
What are our immediate next steps?
What are our long-term next steps?

Template adapted from Cherasaro, T. L., Reale, M. L., Haystead, M., & Marzano, R. J. (2015). Instructional improvement cycle: A teacher's toolkit for collecting and analyzing data on instructional strategies (REL 2015–080). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. http://ies.ed.gov/ncee/edlabs