



College and Career Readiness Standards-in-Action

**ADVANCED
UNIT**

2

FACILITATOR GUIDE FOR
MATHEMATICS

**FOCUSING ON
ASSIGNMENTS AND
STUDENT WORK**

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BACKGROUND AND PURPOSE

States around the nation are integrating college and career readiness (CCR) demands into their adult education programming. Raising the academic bar reflects a willingness on the part of states to act on the empirical evidence of what colleges and employers require of prospective students and employees.

The U.S. Department of Education’s Office of Career, Technical, and Adult Education (OCTAE) has been supporting states’ efforts, for over a decade, through its program of national leadership activities. A technical assistance report¹ was produced for states to voluntarily employ when strengthening their academic programs. OCTAE then initiated the Implementing CCR Standards in Adult Education project, more commonly known as CCR Standards-in-Action (CCR SIA). Since 2014, the CCR SIA project has developed several professional development units.

The CCR SIA project initially developed four foundational professional development units to ensure that instructors clearly understand the intent and meaning of CCR standards. At their heart is a focus on the most critical content and processes for developing the kind of mathematics mastery needed for college and careers. Through Foundational Units 1–4, adult educators learn how important it is to concentrate instruction on:

- Focusing deeply on the major work of each level;
- Designing learning based on coherent progressions from level to level; and
- Pursuing conceptual understanding, procedural skill and fluency, and application—all with equal intensity.

States report that the training embedded in Foundational Units 1–4 has been an essential first step in helping adult educators become comfortable with the demands of CCR standards. Once instructors clearly understand the intent and meaning of their CCR standards, the next step is to work through how, over time, they will support students in meeting them. This work is at the heart of all the advanced units. They build on and extend the content gained through the foundational units.

¹ The CCR Standards for Adult Education report is available at:
<http://lincs.ed.gov/publications/pdf/CCRStandardsAdultEd.pdf>. (2013)

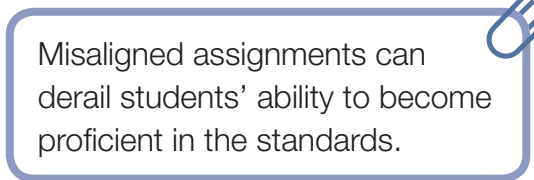
Advanced Unit 2 increases the levels of engagement with the key instructional advances in the areas of application, experimentation, advocacy, and innovation. The training embedded in Advanced Unit 2 not only deepens adult educators’ understanding of the intent and meaning of the standards; it introduces teacher-friendly tools to facilitate effective standards-based instruction. Advanced Unit 2 materials and methods:

- Delve into the instructional and institutional implications of level-specific CCR standards; and
- Help shape the approach adult educators will take in teaching the standards and in sustainably implementing standards-based reforms.

Nothing more accurately confirms what happens in the classroom than instructor assignments and the student work produced in response. Instructor assignments and the resulting student responses are, literally, standards-in-action. Together they verify what students are being taught and what they have learned, remembered, and incorporated into their knowledge base.

The CCR Student Work Protocol outlined in this unit is designed to evaluate the quality of assignments and their alignment with the CCR standards. It guides instructors through a collaborative process of reviewing assignments,² the accompanying lessons, and resulting student work.

The Student Work Protocol makes it possible to examine the topics being studied and to determine not only which CCR standards are being taught, *but also which are being learned*. Research shows that poorly designed assignments³ are one of the leading causes of poor student outcomes. Misaligned assignments can derail students’ ability to become proficient in the standards. In sum, student learning suffers if assignments—and the instruction leading up to them—are not rigorous and targeted.







Misaligned assignments can derail students’ ability to become proficient in the standards.

² Differentiating a lesson from an assignment: A lesson includes, for example, full teacher instructions, scripts, examples, questions, and investigations. It is intended to be experienced by the student in a full class period, over several class periods, or during another segment of time. An assignment is what students produce as a result of a lesson, and it may or may not come with accompanying scoring guidelines, answer keys, identified target standards, or other information to support teachers.


³ The Education Trust. (n.d.). *Standards in Practice: Instructional Gap Analysis Strategy*. Washington, DC: Author Retrieved May 8, 2015, from <http://edtrust.org/resource/standards-in-practice-instructional-gap-analysis-strategy-aligning-instructions-with-standards-and-assessments>; Achieve, Inc., *EQuIP Student Work Protocol*, <http://www.achieve.org/EQuIP>.

The CCR Student Work Protocol is based on methods pioneered by The Education Trust and advanced by the EQuIP Student Work Protocol. It enables all staff members to share common understandings of the challenging work demanded by their CCR standards. It also prompts instructors to immerse students in rich learning contexts that promote active problem-solving, exploration, and discovery through assignments—a central component of instructors’ work. Most important, this method helps programs close the gap between the concepts that students are learning and the expectations that the standards embody. Common expectations will result in more equitable educational opportunities for students and create an additional foundation for collaboration among adult educators and programs in the state.

The purposes of the CCR Student Work Protocol are fourfold:

-  ***To confirm the alignment of assignments with CCR standards.*** This protocol guides educators to review the relationship between the requirements of assignments and the demands of CCR standards. It will result in nuanced feedback on the quality of assignments, with the ultimate goal of providing appropriately rigorous academic work for students.
-  ***To examine student responses to assignments as evidence of how well the lessons support student learning.*** The protocol guides adult educators through reviews of samples of student work to determine if they point to any possible weaknesses or misconceptions.
-  ***To provide evidence-based suggestions for improving the assignment and related instructional materials.*** Reviewers use insights gained from examining the assignment and student work to strengthen and revise both the assignment and the related instructional approaches. This ensures that students are immersed in rich learning contexts and are engaging with the most important ideas and questions as well as using skills related to the standards.
-  ***To provide instructors with the opportunity to engage in structured, thoughtful conversations with colleagues about standards-based instruction.*** Through shared professional learning and collaborative work and conversations, educators can develop common high expectations for students that are well-aligned with the demands of the CCR standards.

Instead of reviewing the standards and then developing aligned assignments and classroom activities, this method uses backward design, meaning it proceeds in the opposite order. It starts with an examination of actual student assignments. Focusing on assignments that instructors are currently giving their students makes this review process relevant and concrete. It allows instructors to take a fresh look at what they are assigning to see if changes are needed to strengthen the assignments' alignment with CCR standards.



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The CCR Student Work Protocol also provides instructors with the foundational information they need to conduct a Lesson Study,⁴ a form of teacher inquiry, used to improve teaching and learning, in which a lesson that accompanies an assignment is refined and tailored to the demonstrated needs of students.

As instructors improve standards-based assignments and their accompanying lessons, they can archive and catalogue both for program use. That way, when new staff members arrive, programs have a ready source of relevant, challenging assignments and lessons; instructors can then spend their time refining existing assignments and lessons, rather than inventing new ones in isolation.

⁴ Instructions for conducting a Lesson Study are in the Appendix.



OVERVIEW

Through this train-the-trainer instruction, participant-trainees will analyze teacher assignments and accompanying student work and lessons. Under your tutelage, they will learn how to use their analyses to strengthen the relevance, rigor, and alignment of assignments with CCR standards and address student misunderstandings. Together, participants will:



Analyze the purpose and demands of the assignment (without consulting the student work samples or standards): What are students expected to learn from the assignment? What skills and knowledge must students exhibit to complete the assignment successfully?



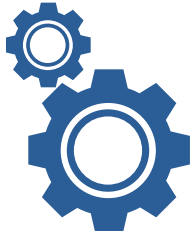
Select the CCR standards that best fit the demands of the assignment: How closely aligned is the assignment with the demands of one or more level-specific CCR content standards?



Analyze student work: What do the patterns across multiple student work samples demonstrate about the clarity and alignment of the assignment?



Redesign and strengthen the assignment: What do the patterns of student work suggest about how the assignment or the supporting instruction might be re-envisioned? How could the assignment be enhanced to add greater rigor and encourage higher student achievement? What does the student work reveal about the skills and knowledge students have learned and still need to learn?



WORKSHOP MATERIALS

- Feedback Checklist for Team Members
(one copy for each participant for at least the first few sessions)
- CCR Student Work Protocol for Mathematics
(one copy for each participant for each session)
- Two teacher assignments
(one copy of each assignment for each participant for each session)
- Corresponding student work and lesson
(one set for the team to share for each session)
- Redesigned Assignment for Mathematics
(one copy to complete each time an assignment is presented for review)
- State’s CCR standards for mathematics
(reference copies for the duration of the team’s sessions)



TIME FRAME

This training takes a day.

When participant-trainees return to their programs to conduct the CCR Student Work Protocol with colleagues, they should plan to meet for one hour every two weeks. They should allow extra time at the first session to introduce the Student Work Protocol process, set ground rules, and analyze the first assignment.

Back in programs, student work sessions should be scheduled in advance and held regularly. If they are able, participant-trainees should attend the first meeting and help to determine the schedule of sessions for the year. The more regularly meetings are held, the more automatic and efficient the process will be. After every instructor on the review team has presented an assignment with student work, the process can be repeated indefinitely with other assignments. This way, instructors can continue to hone their skills and build a repository of excellent assignments.



TRAINING PREPARATIONS

Assign adult educators to small groups (four to six members each). Keeping the groups small will allow participants to feel more comfortable speaking. Organize the teams in a way that best suits your needs and those of your participants. Teams could be organized vertically, with members representing different adult education learning levels, or horizontally, with all team members teaching at the same learning level. Also consider geographic proximity in forming the groups so that participants can readily meet to do the work.

Select table leaders in advance, or ask each table to choose a leader. Table leaders should keep track of time and make sure activities are moving along. Table leaders can also share information with the table and notify you when there are questions or if the group needs more support. (If table leaders are selected in advance, provide them with copies of the PowerPoint presentation, agenda, and all participant materials before the training so they can prepare.)

Introduce the CCR Student Work Protocol and set ground rules for the work that participants will do—without attempting to analyze a specific adult educator’s assignment. Using real assignments (and accompanying student work) that do not belong to the participants being trained will allow them to internalize the process without being distracted by having one of their colleagues’ assignments in the spotlight.

Select two assignments and accompanying student work and instructional materials to use in the training. Using two assignments will allow participants to gain confidence in using the CCR Student Work Protocol to evaluate the alignment of assignments and their accompanying lessons with CCR standards.

The following charts will help you select assignments and prepare student work samples for training:

DIRECTIONS FOR SELECTING ASSIGNMENTS
Select an assignment aligned with CCR standards that is targeted for a particular level of learning.
Select a representative assignment that students completed <i>recently</i> .
If lessons that focus on a particular concept included several assignments, present the culminating assignment based on the fullest expression of that concept.
Choose an assignment that could use some attention and improvement (rather than one of the instructor’s best assignments).
Include directions and scoring guidelines for student assignments just as they were presented to students, with no other details or context included. Include copies of any texts that are part of the assignment.
If the assignment was presented to students orally, write down the instructions as they were given and note that they were spoken.
Do <i>not</i> include lesson plans, teaching or learning goals for the assignment, what students did or learned, and other related information.

DIRECTIONS FOR PREPARING STUDENT WORK SAMPLES
Collect a representative sample of student work that captures a range of abilities in the classroom.
Make the collection a manageable size— three to six samples—matching or slightly exceeding the number of people on the review team.
If necessary per your program’s policies, remove student names from the work samples to maintain student confidentiality and facilitate open discussion.
Copy the student work <i>before</i> grading the papers so that each sample has only the student responses to the assignment.
Number the individual pieces of student work so that reviewers can organize their discussions more easily.

These charts can be shared with participants. They can use the charts to help them implement the CCR Student Work Protocol in their programs.

Before participants meet, distribute the assignments (but not the student work or the accompanying lesson). That way, participants can analyze the purpose and demands of the assignments before meeting as a group for the training. Also make copies of the materials listed on page 6 of this document so they can be distributed at the workshop.

Familiarize yourself with the PowerPoint presentation and participant materials (tools and templates, support documents). The annotated PowerPoint presentation will help you prepare for the training. The notes section of each slide provides the big idea of the slide, talking points, and other pertinent notes. These will help you frame your presentation and provide important context as you deliver the slides. The slides, coupled with the information in this Facilitator Guide, are designed to give you the support and guidance necessary to lead a successful training. Rehearse before the training to master the material. With practice, you will be able to put ideas in your own words rather than reading the slides word for word. Rehearsing the material will also help prepare you to answer questions from training participants as they come up.

TRAINING DIRECTIONS

Introduce the purpose of the CCR Student Work Protocol to participants (Slides 2-3). Engage in a frank discussion about the challenges and rewards of giving and receiving feedback on assignments. Set the expectation that even the strongest assignments can be improved. Remind participants that the purpose of this process is to strengthen the assignments and their alignment with CCR standards, not to judge or evaluate the presenting instructor.

As part of the introduction, include a rationale for starting with actual assignments and moving from there to the standards. Underscore the need for the assignment to stand alone initially, without lesson plans or additional supporting information. It is important to be able to determine from the assignment itself (and the resulting student work) which content is being studied and which standards are being taught and learned.

Review the feedback checklist with participants (Slide 4). Spend some time reviewing and reflecting on what constitutes effective, respectful feedback for fruitful discussions. Start by reviewing the feedback checklist and then asking participants to complete it. For at least the first few meetings, let participants know they should fill out the checklist before and after each work session. This will firmly establish the ground rules with team members and serve as a reminder to self-assess the quality of their feedback. As the participants in a workgroup gain experience, they can use the checklist intermittently as a refresher.

Outline the four-step CCR Student Work Protocol process (Slides 5-6).

As you review the four steps in the process, remind participants that no matter how good an assignment is, it can always be improved. Remind them as well that the process focuses on strengthening assignments—not on evaluating students or judging the assignment of the presenting instructor.

Step 1 : Analyze the purpose and demands of the assignment (Slides 7-9).

The first step is for participants to develop a focused understanding of the assignment without consulting the standards or student work. Ask them to note at which level of learning the lesson is targeted. They should then work independently to analyze what the assignment is asking of students—what they must know and be able to do to complete the assignment. After that, the participants should share their thoughts with the group. (When conducting this process back in their programs, the instructor who is presenting his or her assignment should only listen during Step 1 and should not lead the group discussion.)

Provide time for all participants to study every part of the assignment, including any scoring guidelines. Remind them to view the assignment through students’ eyes—just as they first saw it:

- Prompt participants to take the assignment at face value. Ask them to limit their observations to what the assignment communicates about its purpose; they should not make assumptions or assign purposes to it that are not readily evident. Throughout the process, all discussions and observations should be based only on evidence found in the assignment.
- Ask participants to study the assignment thoroughly, making notes about its demands. This requires participants to actually work on the problem(s) and answer the question(s) in the assignment.
- Remind them to use only the directions and prompts provided to analyze the assignment’s requirements. Prompt them not to consult the instructional context or supporting materials in the lesson. This will allow them to have an unfiltered and unbiased view of students’ experience with the assignment so that its effectiveness can be evaluated accurately.
- If students were given scoring guidelines or rubrics as part of the assignment, ask participants to review them as well.
- Encourage participants to resist the temptation to imbue the assignment with knowledge and skills that are not readily apparent, even if everyone agrees they were probably intended. If there are skills and knowledge that naturally could be part of the assignment, ask participants to capture the good ideas about how to make those explicit in the assignment’s redesign.
- Make notes in the space provided on the protocol about the content and performance demands of the assignment.

Step 2 : Select the CCR standards that best match the assignment’s demands (Slides 10-12).

Ask participants to work together to select the CCR standards that most closely embody the content and student performance requirements in the assignment. They should also identify whether the assignment addresses one or more of the key instructional advances. Then they need to determine the level of alignment with the CCR standards from the targeted level of learning and note any gaps.

- Ask participants to select up to four or five of their CCR standards that match the content and performance requirements of the assignment—have them first check the CCR standard(s) from the targeted level of learning, including the Standards for Mathematical Practice. If the assignment appears to be a better fit for CCR standards that are “below level,” ask participants to note this as well as the gap between that lower-level standard and a corresponding standard at the appropriate level of learning. (When conducting this process back in their programs, the presenting instructor should contribute to the discussion only after other members of the team have shared their unbiased thoughts on the assignment’s alignment with CCR standards.)
- Next, ask participants to identify the key instructional advances (focus and rigor)⁵ that are addressed by the assignment. Remember, it is likely that more than one advance will be present.
- Remind participants to avoid forcing an assignment to fit certain CCR standards. If the assignment clearly does not fit any CCR standard at the appropriate level, skip to Step 4.

⁵ Coherence—the third key advance—deals with how lessons and units connect. Therefore, it is unlikely that coherence can be identified in a single assignment.

Alignment Descriptors: Ask participants to determine the quality of alignment, using the chart below as a guide. They should:

- Rate the alignment of the assignment’s content and performance with every standard identified as a target for the assignment.
- For any rating of 1 or 2, ask participants to describe the gaps between the knowledge and skills demanded by the standards and those of the assignment.

ALIGNMENT OF THE ASSIGNMENT WITH THE IDENTIFIED CCR STANDARD(S) FROM THE TARGETED LEVEL OF LEARNING		
3	EXCELLENT	The demands of the assignment are clearly consistent with all aspects of the content of the identified standard(s).
2	STRONG	The demands of the assignment are consistent with the <i>most critical</i> aspects of the identified standard(s). However, some of the <i>less critical</i> aspects of the standard(s) may not be addressed.
1	WEAK	The assignment demands do not address the <i>most critical</i> aspects of the identified standard(s). However, some of the <i>less critical</i> aspects of the standard(s) are addressed.
0	NO ALIGNMENT	No CCR standards match the demands of the assignment.

Note: When conducting this process back in their programs, the presenting instructor should participate fully in the process for Steps 3 and 4. He or she can respond to and ask questions but should be careful not to monopolize the discussion.

Step 3 : Analyze student work (Slides 13-15).

Ask participants to diagnose how well students performed on the assignment, and whether and how they struggled with it. This information will contribute to the final step of determining how to strengthen the assignment as well as the lesson. It can also contribute to the development of strategies to provide supports for any identified student weaknesses.

- First, ask participants to work individually to diagnose each sample of student work to determine: (1) how well students seemed to understand the assignment; (2) how well each student’s work demonstrated his or her proficiency with the targeted standards; and (3) the depth of each student’s understanding of the content.
- Then ask the team to work collectively to compare and reconcile their individual reflections and identify patterns across the student work samples. Have them note what students seem to know and not know, and how they struggled—if they did.

Step 4 : Redesign and strengthen the assignment (Slides 16-19).

Now, ask participants to determine what should be kept, deleted, or added to the content and performance demands of the assignment. The goal is to tighten the assignment’s alignment with the targeted CCR standards from the assignment’s level of learning.

- As a group, participants should review their notes and observations from Steps 1–3. Any changes should bring the assignment into closer alignment with CCR standards from the targeted level of learning. The redesign should also add challenge to the assignment and encourage higher student achievement. This includes providing more and better opportunities for students to employ (and instructors to observe) the relevant Standards for Mathematical Practice.
- Ask one member of the group at each table to fill out the Redesigned Assignment form with revision decisions.

Then ask participants to look at the instructional context of the assignment. They should scan the lesson, noting its purpose, content, and organization. They should also note the placement of the assignment within the context of the lesson.

Ask participants at each table to review their notes from Steps 1–4 to decide collectively if the lesson needs to be strengthened to meet students’ demonstrated needs:

- What does the student work tell us about the kind and level of knowledge and skills students have learned and still need to learn?
- How can we reconfigure the lesson to address common errors and misconceptions noted in the student work?
- What are the implications of these findings regarding the need for additional instruction?
- Do we want to conduct a Lesson Study to share, test, and hone a lesson to accompany the (improved) assignment?

Repeat the four-step CCR Student Work Protocol with a second assignment (Slides 20-21). Review the four steps of the CCR Student Work Protocol and ask these questions:

- What are students expected to learn from the assignment?
- How closely aligned is the assignment with one or more level-specific CCR content standards?
- What does the student work reveal about the skills and knowledge students have learned?
- How can the assignment be enhanced to add greater rigor and encourage higher student achievement?

Fill out another Redesigned Assignment form (Slide 22-23). Then ask participants to share their redesigned assignments with the whole group. Also have them share what the student work indicates about how the lesson could be strengthened. (When participants repeat the CCR Student Work Protocol back in their programs, the presenting instructor will fill out the Redesigned Assignment form.)

Ask the team to fill out the feedback checklist (Slide 24). Explain to participants the importance of this step when conducting the four-step CCR Student Work Protocol process back in their programs. It is especially important that the presenting instructor share his or her feelings and thoughts about the experience with the group.


GUIDELINES FOR IMPLEMENTING THE CCR STUDENT WORK PROTOCOL IN ADULT EDUCATION PROGRAMS

Let participants know that it is important to determine the full schedule of workgroups to allow staff to plan (Slides 25-26). They should look ahead to schedule subsequent meetings of each small group to focus on a different instructor's selected assignment. Every team member should have the opportunity to submit at least one of his or her assignments for review. The more regularly workgroups hold meetings, the more automatic and efficient the process will be.

Highlight for participants the importance of facilitating at least the first several meetings of each workgroup (Slide 27).

In the beginning, the process works best and is most beneficial when facilitated. Instructors who are new to the process should not be expected to facilitate their own meetings. When

a facilitator is present, he or she can remind reviewers to keep comments on topic and give supportive feedback, as well as watch the time to keep the process moving.



Choose a confident instructor who is open to receiving feedback from peers—someone who can model the process—to present the first assignment.

Tell participants that at least a week before each team meets, the presenting instructor should select a classroom assignment (Slide 28). When participants return to their programs, they should collect the assignment, corresponding student work, and lesson plan for copying and sharing with the team. Instruct participant-trainees to choose a confident instructor who is open to receiving feedback from peers—someone who can model the process—to present the first assignment. If possible, participant-trainees should provide team members with a copy of the assignment prior to meeting.

Catalogue the improved assignment (Slide 29). The presenting instructor will fill out the Redesigned Assignment form. Then he or she, or another instructor on the team, will be asked to try the improved assignment and report its implementation to the team—what went well and what could be even better. At the team’s next meeting, the instructor who taught the assignment will be asked to:

- Summarize how the assignment was strengthened to align more fully with the selected standards. (Also note ways to make it even stronger.)
- Explain briefly any teaching strategies used to better prepare students for the assignment.
- Share examples of new student work and describe what they indicate about improved student learning and achievement.

If the assignment proved successful, the workgroup should add the improved assignment to a resource file for instructors in their program to use. This could be an electronic file, where instructors could go to easily download, share, and update the improved version of the assignment.

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APPENDIX: CONDUCT A LESSON STUDY

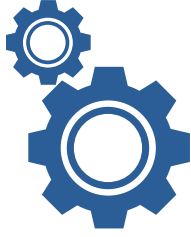
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INTRODUCTION

While adult educators won't automatically improve a lesson every time that they conduct an evaluation of assignments and related student work, they could decide to do so on occasion. For example, if the student work indicates errors and misunderstanding significant enough to require re-teaching, instructors can choose to conduct a follow-up Lesson Study.

There are four main reasons that a Lesson Study is worth the time and effort:

-  ***Improves lessons so they meet the demonstrated needs of students.*** Lesson Study focuses on students and their learning. Adopting a methodical, evidence-based approach, it results in field-tested lessons and materials that can be used and adapted by instructors to better meet students' learning needs. By the end of the Lesson Study process, teams know how students learned certain content.
-  ***Allows instructors to stretch their teaching practices and experiment with new ideas concretely.*** A Lesson Study is an ideal venue for teaching improvement: It builds on what teachers do, giving them the opportunity to learn by doing the real work of teaching in cooperative groups. It also helps teachers become comfortable observing and learning from one another. The Lesson Study approach to professional development concentrates on how actual students learn and what kinds of instructional activities support their mastery of certain content.
-  ***Gives instructors the opportunity to share, test, and hone lessons with their colleagues.*** Because instructors experience the same lesson simultaneously through a Lesson Study, they have opportunities to gain insights from one another and become more reflective about their practice. The approach builds professional learning communities around teaching.
-  ***As instructors create strong standards-based lesson, they can archive them for program use.*** That way, when new staff arrives, programs have a ready source of relevant, challenging lessons; instructors can then spend their time refining existing lessons, rather than inventing new ones in isolation.



MATERIALS

- Lesson Study Guide
- Guide to Develop a Mathematics Lesson for Lesson Study⁶
- Mathematics Lesson Development Checklist
- Reference copies of the mathematics CCR standards



TIME FRAME

When choosing to conduct a Lesson Study, instructors will need to meet back in their programs several times for a total of about a day and a half. This includes:

- 4 to 8 hours to adapt or create a lesson to accompany the revised assignment
- Approximately 1 hour to observe the lesson being taught
- 2 to 4 hours to reflect on and revise the lesson
- 1 to 2 hours to observe the revised lesson
- 1 to 2 hours to reflect on and debrief the revised lesson

⁶ Drawn from essential elements of Student Achievement Partners' *Lesson Planning Tool*.



DIRECTIONS

Step **1** : Create or redesign the lesson.

A Lesson Study begins with identifying the goal or endpoint of the lesson using student data (student work examined during the CCR Student Work Protocol process):

- What do you want to foster and help develop in your students?
- What gaps do you see between these aspirations and how students are actually doing?

Discuss these gaps with your group. Team members should select a “gap” on which they would like to focus in their Lesson Study. This will serve as their learning goal. They should then situate the goal within a sequence of learning. They should reflect on how the content of the lesson is related to other content taught at that level and to those particular students. They should include only highly relevant content in this description and should state explicitly how the lesson relates to a sequence of learning and addresses the Lesson Study goal. Team members should also enter this information on the Guide to Develop a Mathematics Lesson for Lesson Study.

From there, the team should design a lesson to meet that goal by carefully exploring how student learning, thinking, and behavior can change and improve as a result of the lesson. Team members should anticipate what kinds of experiences are likely to support students’ learning and what kinds of difficulties students might encounter and overcome.

Team members should follow the guide to complete the initial revision of the lesson. They should select a group of “focus” standards (3 to 4) to target in the lesson based on student needs. In addition, select the appropriate number of practice standards (at least one) that connect to the content. Name the lesson, describe its key objectives, and state explicitly how the lesson relates to a sequence of learning and addresses the Lesson Study goal. Guidance and support should be provided for how and when the Standard(s) for Mathematical Practice will be observed and assessed. Have presenters enter this information on the Guide to Develop a Mathematics Lesson for Lesson Study (or a lesson template of their choice).

Step 2 : Teach and observe the lesson.

The instructor who initially presented the assignment and related student work should re-teach the lesson while the other members of the workgroup observe it. (Alternatively, if the presenting instructor's students would not benefit from the revised lesson, a second member of the workgroup could teach the lesson to another group of students.) Remind team members that when observing the lesson being taught, they should focus on how and whether the lesson builds students' knowledge and skills, not on the details of the lesson delivery. They should review observation etiquette on the Lesson Study Guide and record their observations on the lesson plan itself (to keep the focus on the goals and activities of the lesson).

Step 3 : Debrief the lesson.

Immediately afterward, or within a few days of teaching the lesson, the team should gather (in person or virtually) to debrief. This provides an opportunity to share team members' observations of what worked and what could be improved in the lesson. All members of the workgroup—not just the instructor who taught the lesson—should listen and provide feedback and should support their statements with concrete evidence. Team members should concentrate on the lesson design, not delivery. Team members can review questions from the Lesson Study Guide for reference:

- Were the lesson goals clear?
- Did the lesson sufficiently target CCR standards (the student knowledge and skills that are the focus of the lesson goals)?
- Did the activities support achieving the lesson goals?
- Was the flow of the lesson coherent?
- What did student responses, presentations, or discussions indicate about what students were learning?

Step 4 : Revise and re-teach the lesson, if appropriate.

The next step is to revise the lesson based on observations and analysis. Team members should re-visit the Guide to Develop a Mathematics Lesson for Lesson Study to ensure that the revised lesson stays aligned with the targeted CCR standards. The team should select a different group member to teach the revised lesson to another class that could benefit from a review of the same content.

Step 5 : Document and disseminate the lesson.

The final step is to repeat the observation and debriefing steps. During the debrief, the team should explore the relationship between the two versions of the lesson. Team members should clarify what changes were made and how they relate to the goal of instruction. They should also report on what students learned. This includes identifying and discussing 1) the progress that various classes of students made toward meeting the Lesson Study goal; and 2) the knowledge they gained and skills they learned along the way.

Step 6 : Add the improved lesson to a resource file.

A member of the workgroup (could be the presenting instructor) should use the Mathematics Lesson Development Checklist to serve as a final quality check of the lesson they developed. Then the workgroup should add that lesson to a resource file for instructors in its program to use. This could be an electronic file where teachers could go to easily download, share, and update the improved version of the assignment.