College and Career Readiness Standards-in-Action

Translating Standards Into College and Career Readiness-Aligned Curriculum and Instruction

Facilitator Guide for Mathematics Unit 1

Produced under U.S. Department of Education Contract No. ED-VAE-13-C-0066 with StandardsWork, Inc. and Subcontractor, Reingold, Inc.

.

Contents

Introduction

The College and Career Readiness Standards-in-Action (CCR SIA) innovations are new materials and methods designed to support the implementation of CCR standards in adult education classrooms. The CCR SIA materials were developed for adult education program administrators and instructors. They build on tools and materials developed as part of earlier efforts to support standards-based instruction in adult education.[1] CCR SIA is designed to encourage adult educators to address the new and demanding standards within a learning community. CCR SIA's materials and methods combine "learning by doing" with the best ways to implement the standards in the classroom.

Background and Purpose

For standards-based education reform to succeed, adult educators first and foremost must understand the intent of the standards—what knowledge and skills should be taught and learned. This unit focuses on how the goals articulated in the standards help shape instruction. The purpose of the unit is to help adult educators adapt and create curricula that will teach the content of the CCR standards to students. The unit supports the development of a range of classroom lessons, activities, and assignments. It is also designed to deepen adult educators' understanding of the meaning and intent of the standards, and to introduce them to teacher-friendly tools to facilitate standards implementation.

The need for aligned resources and instructional guidance is even more pressing since curriculum resources guide much of instruction. Research shows that curriculum resources greatly influence how teachers make the leap from intentions and plans to tangible classroom activities.[2] Textbooks play a central role in how instructors organize content and set learning tasks.[3] In recognition of the reliance on curriculum resources as guides for instruction, this unit focuses on the development of curricula that is aligned to CCR standards and that supports standards-based instruction.

The activities in this unit address three high-priority areas of standards-based reform:

1. *Analyzing the Alignment of Resources to CCR Standards.* It is critical to achieve tight alignment of curriculum resources to CCR standards. Instructors depend heavily on their

[1] MPR Associates. *Standards-in-Action: Innovations for Standards-Based Education* (2009). http://www.adultedcontentstandards.ed.gov/ReferenceFiles/Guide/Standards_In_Action.pdf; CCR Standards Project (2015). https://lincs.ed.gov/programs/ccr
[2] Association for Supervision and Curriculum Development. (1997). *Education Update,* Vol. 39, No. 1.
[3] Schmidt, W. H., McKnight, C. C., & Raizen, S. A. (1997). *A Splintered Vision: An Investigation of U.S. Science and Mathematics Education.* Boston/Dordrecht/London: Kluwer Academic Publishers.

printed curriculum. This leads to curriculum resources dictating not only what is taught, but also how and in what sequence. Instructors who know the standards they are adopting are the individuals best positioned to evaluate curriculum resources currently in use. Checking for alignment ensures that instructors will not simply teach what the current curriculum focuses on, but rather provide instruction centered on what the new standards demand. Learning how to evaluate resources builds capacity in instructors to align their teaching to CCR standards. It also provides instructors with opportunities to work together to define what CCR standards-based instruction should look like, and determine whether their resources are in fact well-aligned.

2. *Revising a Resource to Improve Alignment to CCR Standards.* Instructors can address current curriculum resources' gaps in alignment immediately after identifying them. Research shows that the effectiveness of a curriculum revision process is substantially greater when that curriculum is reviewed and rewritten by those using the resource. Doing this increases the essential "buy-in" that so often is noted in research as vital for effective curriculum reform.[4] The process of identifying and filling the gaps in current curricula also provides instructors with readily available resources aligned to CCR standards.

3. *Creating CCR-Aligned Lessons.* Translating CCR standards into lessons is challenging. Instructors can get frustrated when they are faced with what they may feel is a long list of standards to follow and not enough time to address each one. Learning how to create effective lessons will show instructors not only how to bundle CCR standards, but also how to reinforce the key instructional advances and level-specific demands of the standards. Conducting a lesson study will provide participants the opportunity to share, test, and hone lessons with their peers. It also will allow instructors to stretch their teaching practice and experiment with new ideas, while staying open to continuous improvement. Because instructors experience the same lesson simultaneously, they will have opportunities to gain insights from one another and become more reflective about their practice.

By taking these actions, instructors will increase their understanding and ownership of CCR standards. They will also gain the skills needed to align resources, and put them to use in implementing instruction that fully addresses the standards. The materials developed can help fill the need for curriculum resources aligned to CCR standards. In addition, the record of these evaluations (and subsequent revisions) will be a valuable tool for staff members who are not involved in the original evaluation and revision. Sharing the results provides a practical way to disseminate information about the demands of CCR standards, how well resources align to them, and how to continue to bring instructional resources into alignment.

[4] Judy A. Johnson, Ed.D. *Principles of Effective Change: Curriculum Revision That Works.*

Overview

The activities embedded in this unit will empower the adult educators in your state to answer three crucial questions:

- Are the resources we are using tightly aligned to our CCR standards?
- How can we modify curriculum resources currently in use to more tightly align to the standards?
- How can we modify our teaching practices to achieve the necessary alignment?

Part 1 of the training begins by your teaching adult educators how to discern what curriculum resources aligned to CCR standards look like. First, they will review the alignment and utility of sample adult education resources using the Mathematics Resource Alignment Tool. It is organized around the key advances and level-specific demands of CCR standards.

Once they determine that a resource is not fully aligned, you will begin Part 2 of the training: how to fill alignment gaps in the resource. Select one lesson to improve using the Mathematics Lesson Revision Template, so that it exemplifies both the key advances and level-specific demands of the standards. The result will be a lesson that is informative and relevant, and can be seamlessly integrated in instructors' existing curriculum.

In Part 3 of the training you will engage adult educators in a lesson study. Initially, they will work with a sample lesson aligned to CCR standards and review it against the Checklist to Guide Mathematics Lesson Development to strengthen its alignment. Next, you will review the lesson study process so adult educators understand the steps they need to take to implement lesson studies in their programs.

After completing all three parts of the unit, teams of instructors will have engaged in processes through which they can evaluate and revise resources being used in their programs. This unit will build capacity in your instructors and create resources aligned to the CCR standards.

Materials: What You Need

Part 1: Analyzing the Alignment of Resources to CCR Standards

- Mathematics Resource Alignment Tool (#1)
- CCR Content Progressions (tagged with the Major Work of the Level) (#2)
- Standards for Mathematical Practice (#3)
- Reference copies of the mathematics CCR standards
- Instructional resources to review

- PowerPoint slide presentation

Part 2: Revising a Resource to Improve Alignment to CCR Standards
- Mathematics Resource Alignment Tool (#1)
- CCR Content Progressions (tagged with the Major Work of the Level) (#2)
- Standards for Mathematical Practice (#3)
- Focus on the Major Work of the Level (#4)
- Mathematics Lesson Revision Template (#5)
- Reference copies of the mathematics CCR standards
- PowerPoint slide presentation

Part 3: Creating CCR-Aligned Lessons
- CCR Content Progressions (tagged with the Major Work of the Level) (#2)
- Standards for Mathematical Practice (#3)
- Checklist to Guide Mathematics Lesson Development (#6)
- Lesson Study Protocol (#9)
- Reference copies of the mathematics CCR standards
- Sample lesson
- PowerPoint slide presentation

Time Frame to Complete the Unit

The initial process of evaluating an existing resource for its alignment to the CCR standards, outlined above for Part 1, takes a team 5 to 7 hours.

The time needed to revise one lesson (Part 2) will vary depending on how much modification is required to bring it into alignment. The initial training to modify a lesson could take 6 to 8 hours. (Once instructors are familiar with the process, subsequent lessons could be revised in 4 to 6 hours.) Instructors can do this work virtually with a partner or in small groups in the same setting.

Part 3 centers on conducting a lesson study, which requires instructors to meet several times for a total of about a day and a half. This includes 4 to 8 hours to adapt or create a lesson, an hour to observe the lesson being taught, 2 to 4 hours to reflect on and revise the lesson, another hour to observe, and 1 to 2 hours to reflect and debrief.

Preparation for Unit 1

Action steps to complete prior to beginning each part of Unit 1

Create small groups of participants, ideally four to eight at each table. The maximum size of a group for this training depends on your space, need, and comfort level. Make the group small enough so that you can be in touch with each table of participants. This way you can make sure participants understand the concepts and are fully engaged.

Select table leaders in advance, or ask each table to choose a leader. The table leader will keep track of time and bring participants together. The leader will also make sure activities are moving along, share information with the larger group, and notify you when there are questions or if the group needs more support. (If table leaders are chosen in advance, provide them with copies of the PowerPoint presentation, agenda, and participant materials.)

Be prepared to move around the room when participants are working. This allows you to check on their understanding and makes you readily available to answer questions.

Prepare the training materials. If possible, provide digital copies of the materials to participants before the training (via USB flash drives or through email). Then staff can evaluate and align resources electronically—an efficient way for them to complete the work. If materials cannot be made available electronically, make copies of the materials listed on pages 3-4.

Familiarize yourself with the PowerPoint presentation and participant materials. Detailed notes in the PowerPoint presentation will help you prepare for the training. Notes for each slide include the identification of the Big Idea, and Facilitator Talking Points and Notes. These can help you frame your presentation and provide important context. The slides, coupled with the information in this Facilitator Guide, will give you the support and guidance necessary to lead a successful training.

Action steps to complete prior to beginning Part 1: Analyzing the Alignment of Resources to CCR Standards

Determine who will be attending the training and what resource will be analyzed. Organize each training session by one common resource and level of learning. This way, all participants in the room can share their findings and insights. If you are able to choose a resource that they are using, ask participants to bring to the training session copies of the resource they will be evaluating (and improving).

Before the training, get acquainted with the resource(s) that will be evaluated. Ways to understand how a resource is organized, and to gain a sense of its content, include:

- Examine the table of contents.
- Look through the introduction, glossary, index, appendices, and any accompanying digital resources.
- Scan assessments (e.g., pre-, post-, self-, summative, formative) for information about the goals and expectations of the lessons.

Doing so will provide you with insight into the overall content and sequencing of the lessons so you can select a representative sample of the resource for participants to evaluate.

Select a representative sample of the lessons for participants to inspect. Because the various materials in a curriculum resource designed for a particular level of learning commonly are written by the same author(s), participants need only review a representative sample of it to gain a sense of its strengths and weaknesses. Choose between *20% and 30%* of the resource for participants to closely evaluate, in addition to the table of contents and index. (Note: A resource from the same publisher but written for another level of learning will itself have to be evaluated. The findings from one level of learning of a resource cannot be extrapolated to a resource for another level of learning.)

Action steps to complete prior to beginning Part 2: Revising a Resource to Improve Alignment to CCR Standards

Set the expectation for how many lessons in the resource will be modified, over what period of time, and how the work will get done. Here are some questions to guide your decision-making:

- How many programs in the state are using this resource? Can you divide the revision work across several programs?
- Are there certain individuals who can take charge of the effort for each resource?
- Can you partner instructors to revise lessons over time? Can different sets of partners review each other's work?
- Is the resource being used in only one program? If so, how much of the resource do you need to improve to provide instructors with enough guidance to continue revising it on their own?
- What is the timeline for the revision approach you have selected?

Action steps to complete prior to beginning Part 3: Creating CCR-Aligned Lessons

Limit each lesson study group to five or six members. Because this process involves instructors observing instruction in a classroom setting, larger groups could unintentionally overwhelm students or disrupt the lesson. Also consider geographic proximity in forming the

groups so that participants can readily meet to observe lessons and complete the other planning and revision work. (Use lesson study groups as a guide for organizing table groups.)

Think through the observation schedule. You may need to arrange coverage for classes of the instructors observing the lesson.

Implementation Directions for Unit 1

Part 1—Analyzing the Alignment of Resources to CCR Standards

Introduce the purpose of the alignment activity. The process performed in Part 1 will help your instructors determine the degree of alignment of existing instructional resources to CCR standards. Organized by the key instructional advances of the CCR standards, the Mathematics Resource Alignment Tool (#1) is a guide to highlight the resource's strengths and gaps in alignment. The tool prioritizes actions needed to modify the resource to achieve closer alignment to CCR standards. The evaluation process also provides a "trail" for other instructors to follow when determining whether and how the resource will benefit them.

Introduce the Mathematics Resource Alignment Tool (#1). Skim the tool. The criteria in the Mathematics Resource Alignment Tool (#1) reflect the most significant advances in instruction that CCR standards require. They detail what it means for resources to be aligned to those advances. Review the tool directions and three key evaluation criteria:

1. **Focus:** Does the resource focus strongly where the standards focus, including the relevant Standards for Mathematical Practice?
2. **Coherence:** Does the resource design learning around coherent progressions between and within levels?
3. **Rigor:** Does the resource pursue conceptual understanding, procedural skill and fluency, and application with equal intensity?

Understanding each criterion is crucial for achieving alignment and using the Resource Alignment Tool properly. Here are the most important points for each criterion that you should help your instructors understand:

- Criterion 1 (Focus): Focusing instruction on concepts and skills that are deemed the highest priority for a level will ensure that students have a strong foundation in the knowledge and skills they need to possess to be prepared for college and careers.
- Criterion 2 (Coherence): In addition, carefully connecting learning allows understanding to be built on concepts learned at previous levels or from prior lessons. Mathematics is

not a set of disconnected topics or algorithms; it is a coherent body of knowledge made up of interconnected concepts. Instruction needs to reflect this.

- Criterion 3 (Rigor): CCR standards also call for a deep, authentic command of critical mathematical concepts, speed, and accuracy in core calculations, and for students to be able to use those skills and knowledge flexibly in real-world and mathematical applications.

Review the meanings of the various ratings for each dimension. Have your instructors note the extent to which each dimension is met based on the amount of evidence in the resource.

- **Meets:** There is evidence in the resource to indicate that this dimension is met.
- **Partially Meets:** There is evidence in the resource to indicate that the dimension can be met with some revision.
- **Does Not Meet:** There is little or no evidence in the resource to indicate that the dimension is being met. Substantial revision is needed for alignment.

Scan the contents of the sample resource.

Address Criterion 1: Focus. Take the following steps to introduce and work through the analysis of this criterion.

1. *Provide a brief presentation on Dimension 1.1. Major Work of the Level.* The first dimension stresses narrowing the scope of content so that students can better focus their time and energy. Research shows that concentrating on too many topics at once has a negative impact on student performance; focusing gives students a strong foundation and uses instructional time productively. Therefore, the expectation is that most lessons in the resource focus on the most critical concepts for that level.

2. *Introduce the alignment tools that can be used to support the evaluation.* Use the CCR Content Progressions (#2) and CCR standards for mathematics to determine if the resource is targeting standards that address the critical concepts of the level of learning associated with the resource.

3. *Review the evidence statements related to this dimension and, as a group, apply the evidence to the resource.* Walk participants through the evidence for this dimension. Ask your instructors to examine the table of contents, looking for content tied to the Major Work of the Level (MWOTL) as identified by the CCR Content Progressions (#2).

4. *Ask participants to complete the evaluation of this dimension with others at their table.* Give your instructors time to work at their tables to review specific lessons so

they can both record the strengths and weaknesses of the resource, and rate the dimension—using the evidence statements to guide them.

5. *Provide a brief presentation on Dimension 1.2. Standards for Mathematical Practice.* The second dimension explores the important role that mathematical practices play in understanding content and developing important habits of mind. Research shows that grasping the mathematical practices leads to deeper understanding of concepts and procedures, enabling students to extend their thinking to new situations both in and outside of the classroom. Therefore, the expectation is that each lesson meaningfully connects mathematical content to one or more of the Standards for Mathematical Practice.

6. *Introduce the alignment tools that can be used to support the evaluation.* Use the Standards for Mathematical Practice (#3) to determine if the resource is targeting practices that are meaningfully connected to the content of the lessons.

7. *Review the evidence statements related to this dimension and, as a group, apply the evidence to the resource.* Walk participants through the evidence for this dimension. Ask your instructors to determine whether at least one (and no more than four) of the Standards for Mathematical Practice (#3) is targeted in a selected lesson. If so, determine whether the Standards for Mathematical Practice are *central* to the goals of the lesson. Examine whether meaningful connections have been drawn between the content of the lessons and the targeted Standards for Mathematical Practice.

8. *Ask participants to complete the evaluation of this dimension with others at their table.* Give your instructors time to work at their tables to review the rest of the lessons so they can both record the strengths and weaknesses of the resource, and rate the dimension—using the evidence statements to guide them.

9. *Conduct a group debrief of Criterion 1.* See which concepts instructors found in the lessons that qualify as the MWOTL, and whether the supporting concepts are linked directly to major concepts. Also check that they found the practice standards central to the lesson and listed them as targets, and whether they suggested others.

10. *Consider what high-value actions to take to improve the alignment of the resource to Criterion 1.* If a resource covers content from more than one level of adult education (e.g., ABE I, ABE II and ABE III), choose an action that will identify the major work of the level you are targeting (e.g., ABE II). If important content is missing from that level of study, choose an action that will identify supplemental resources. If the Standards for Mathematical Practice are missing or are not central to the lesson, select an action that will improve the connection to the Standards for Mathematical Practice.

Address Criterion 2: Coherence. Take the following steps to introduce and work through the analysis of this criterion.

1. *Provide a brief presentation on Dimension 2.1. Coherence Across Levels, and Dimension 2.2. Coherence Within a Level.* These two dimensions emphasize the importance of coherently developing students' skills—not only in individual lessons but also from level to level. Research shows that coherence that extends previous learning allows students to successfully demonstrate their understanding and apply it in new situations. Therefore, the expectation is that the resource regularly relates on-level concepts explicitly to prior knowledge and to future learning.

2. *Review the evidence statements related to these dimensions and, as a group, apply the evidence to the resource.* Walk participants through the evidence for these dimensions. Ask instructors to look for evidence in the sample resource of a coherent sequence of learning, both within and across lessons, using the CCR Content Progressions (#2).

3. *Ask participants to complete the evaluation of these dimensions with others at their table.* Give your instructors time to work at their tables so they can both record the strengths and weaknesses of the resource, and rate the dimensions.

4. *Conduct a group debrief of Criterion 2.* Get a sense of what instructors thought about the resource's degree of coherence from lesson to lesson and level to level. Ask what questions instructors still have about the role of coherence in a resource.

5. *Consider what high-value actions to take to improve the alignment of the resource to Criterion 2.* If you find a gap, choose an action that will make connections between content from prior and subsequent levels and what students are learning at the level you are targeting. In addition, if needed, choose an action that will rearrange the lessons so that the sequence of knowledge and skills learned in the resource is natural and logical, and supports student learning.

Address Criterion 3: Rigor. Take the following steps to introduce and work through the analysis of this criterion.

1. *Provide a brief presentation on Dimensions 3.1. Conceptual Understanding, 3.2. Procedural Skill and Fluency, and 3.3. Application.* These dimensions focus on the importance of rigorous instruction. Students who come from classrooms with rigorous instruction gain not only conceptual understanding that they can generalize and apply to

new scenarios, but the ability to perform calculations fluently when solving problems. Therefore, the expectation is that the resource regularly:

- Develops students' conceptual understanding (through tasks, problems, questions, multiple representations, and opportunities for students to write and speak about their understanding);
- Asks students to perform calculations and use mathematical procedures quickly and accurately; and
- Requires students to engage in rigorous applications of mathematics in real-world and mathematical contexts.

2. *Review the evidence statements related to these dimensions and, as a group, apply the evidence to the resource.* Walk participants through the evidence for these dimensions. Ask your instructors to skim the resource to see if an *appropriate balance* among the three components of rigor has been achieved. (You can divide up the types of rigor to look for; to do this, assign one aspect of rigor to each group of instructors.) While all three components of rigor should be apparent in a representative sample of lessons, not all three components must be stressed in every lesson. For example, if the targeted standards for a set of lessons address fluency, little time should be spent on conceptual understanding.

3. *Ask participants to complete the evaluation of these dimensions with others at their table.* Give your instructors time to work at their tables so they can both record the strengths and weaknesses of the resource, and rate the dimensions.

4. *Conduct a group debrief of Criterion 3.* Get a sense of how well instructors thought the resource maintained rigor across the three different components. Check on the level of consensus in the group, and find out what questions instructors still have about the role of rigor in mathematical resources.

5. *Consider what high-value actions to take to improve the alignment of the resource to Criterion 3.* If the evaluation shows a deficiency in any one of three areas (i.e., conceptual understanding, fluency, and application), add problems or tasks that are good matches to the standards targeted in a lesson.

Give the resource an overall score. Determine if the resource is tightly aligned, partially aligned, or only weakly aligned to the standards. Summarize the resource's overall strengths and weaknesses with regard to the three criteria to decide on an overall score. Ask your instructors note the extent to which each dimension is met based on the amount of evidence present:

- **Tight Alignment:** Most (four or more) of the dimensions are rated as *Meets*, with the remainder rated as *Partially Meets*. There are only a few minor revisions (or none at all) needed to improve alignment of the resource to CCR standards.
- **Partial Alignment:** Most (four or more) of the dimensions are rated at least as *Partially Meets*. Moderate revisions are needed to improve alignment of the resource to CCR standards.
- **Weak Alignment:** Most (four or more) of the dimensions are rated as *Does Not Meet*. Substantial revisions are needed to improve alignment of the resource to CCR standards.

Once the resource has been scored, briefly review the steps your instructors took to evaluate the resource. Point out that these steps not only identified the present degree of alignment with the standards, but now provide a roadmap for revising the resource in Part 2 of the training.

Part 2—Revising a Resource to Improve Alignment to CCR Standards

Begin the revision process by selecting one lesson from each resource being reviewed. Review this lesson, keeping in mind the high-value actions identified in the Mathematics Resource Alignment Tool (#1). To fill the identified gaps, use the Mathematics Resource Revision Template (#4) and the Mathematics Lesson Revision Template (#5).

- **Address the focus of the resource as a whole:** On the Focus on the Major Work of the Level (#4), list the lessons that address the major work of the level. That will allow instructors who use the resource to know what content to concentrate on. In the same document, identify any content that is *not* covered in the resource and that will need to be supplemented by other resources. If needed, rearrange the lessons so that the sequence of knowledge and skills learned in the resource has a natural and logical flow and supports student learning.

Fill in introductory information for the lesson that is being strengthened. Identify the original source of the lesson: 1) the name of the resource; 2) the publisher; and 3) the lesson name and page number. Identify the intended level of the lesson. Provide a brief description of how the lesson will be used: Is it meant to replace the lesson in the resource? Add content to the original lesson? Fill specific gaps? Finally, insert the number of learning sessions and estimated number of hours needed to teach the lesson.

Start revising. Review each element of the Mathematics Lesson Revision Template (#5) and the high-value actions identified in Part 1. Then, systematically improve the lesson by adding content wherever a gap has been identified.

Address focus with a description of the learning goals and standards that will be targeted in the lesson. On the Mathematics Lesson Revision Template (#5), specify learning goals of

important concepts, topics, and skills based on what students need to know and be able to do by the end of the lesson. Identify what, realistically, can be taught and learned in that time frame. Select a small set (3 to 4) of key CCR standards that represent the major work of the level and that are connected to the learning goals and content of the lesson. Also identify at least one (no more than four) of the Standards for Mathematical Practice that is central to the lesson goals. Draw meaningful connections between the practices and the content of the lesson. (Use CCR Content Progressions [#2] and Standards for Mathematical Practice [#3] to assist.)

Address coherence in the lesson. If missing in the original lesson, describe how the highly relevant content of the lesson is related to other content taught at the lesson's level and fits into a sequence of learning. Identify the prerequisite or foundational content students need to succeed in this lesson. (Use CCR Content Progressions [#2] to assist.)

Address rigor in the lesson. Add or revise tasks and/or activities to address the component(s) of rigor that were missing in the lesson during Part 1. Explain the addition(s)/revision(s). For example, if the lesson targets conceptual understanding, add a couple of high-level discussion questions. If the lesson targets application, add challenging problems and show how to gradually move students toward independence. If it targets procedural fluency, add opportunities for students to practice using the required skills.

Add notes to instructors who will use this lesson. These could include:

- Additional instructions to clarify connections to past or future learning.
- Ways to observe or assess the relevant Standards for Mathematical Practice.
- Specific scaffolds to help students who are struggling with understanding the content.
- Suggestions about how to rearrange the sequence of lessons to improve flow and understanding.

Determine as a group how many lessons in the resource will be modified, over what period of time, and how the work will get done. Be sure to discuss the expectations as a group. Decide who will be responsible for keeping group members on task as they work to strengthen the alignment of lessons in the curriculum resource they are using.

Once the lesson has been revised and additional lessons have been targeted for revision, briefly review the steps that your instructors took to align the resource to the CCR standards. Point out that one or more of those lessons could become the focus of a lesson study performed in Part 3 of the training. There, the lessons undertaken in the quiet of the planning room will meet the realities of the classroom.

Part 3—Creating CCR-Aligned Lessons

Discuss the purpose of lesson study. Lesson study is an example of staff development that builds on what teachers do. Instructors are given the opportunity to learn by doing the real work of teaching in cooperative work groups. It prompts instructors to think beyond their classroom practice to the needs of the whole program. Lesson study also helps teachers to become comfortable with learning from one another through observing and being observed.

Share a sample lesson that is aligned to CCR standards. Sharing a sample lesson (Lesson 2 of 6 from YouthBuild USA 2013-14 Teachers Fellows: "Why Are Multiplication and Division Done Before Addition and Subtraction?") will help familiarize instructors with elements aligned to CCR standards that they should include in lesson(s) they adapt or create. While intentionally bare-boned, the sample lesson includes essential content. This includes clearly identified content standards, one Mathematical Practice, and a clear, essential question related to the lesson objectives. As a group, check this lesson against the Checklist to Guide Mathematics Lesson Development (#6). Discuss ways to further strengthen the alignment of the lesson to CCR standards. These could include:

- Making meaningful connections between the targeted practice standards and the tasks and discussions in the lesson.
- Providing notes to support teachers' use of the lesson.

Working through these steps will build the confidence of instructors, who might use the lesson as the basis of their lesson study before attempting to create their own. Of course, the lesson will need to match the needs of the students and level of the class being taught.

Introduce the steps to engage in a lesson study. Review the Lesson Study Protocol (#7). After each lesson study group reviews the steps, group members could start working on Steps 1 through 4 (below) right away. Alternatively, they could schedule their planning and lesson creation for later.

1. *Choose a goal for the lesson study.* Determine a CCR instructional goal based on the achievement or needs of a class of students, using performance data as a guide. The following are some guiding questions and directions for instructors to determine a relevant goal:

    - 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.
    - Select a "gap" on which you would like to focus for your lesson study.

Enter the instructional goal in the Lesson Study Protocol (#9).

2. *Situate the goal within a sequence of learning.* Next, instructors will need to enter an instructional goal in the template for lesson study. Prompt instructors to reflect on how the content of the lesson is related to other content taught at the level. Include only highly relevant content in this description. Enter this information in the Lesson Study Protocol (#9).

3. *Set the context of the lesson.* Guide instructors through a discussion about their students' abilities and needs with respect to this lesson. The purpose of these discussions is for instructors to gain a shared understanding of where students are experiencing difficulty so that their lesson will address these needs with precision. Enter this information in the Lesson Study Protocol (#9).

4. *Create the lesson.* Each lesson study group needs to design a lesson together or strengthen the sample lesson by using as a guide the Checklist to Guide Mathematics Lesson Development (#6). Select a group of "focus" standards (3 to 4) to target in the lesson based on student needs and supporting the major work of the level. 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. Enter this information in a lesson plan template.[5]

5. *Teach and observe the lesson.* Each lesson study group should select a member of the group to teach the lesson while the others observe it. Remind instructors that observation should focus not on delivery, but on whether the lesson builds students' knowledge and skills. Review observation etiquette with your instructors and ask them to record their observations on the lesson plan itself (to keep the focus on the lesson goals and activities).

6. *Debrief after the observed lesson.* Immediately afterward, or within a few days of the observation, gather the group members to discuss the lesson and share their observations of what worked and what could be improved. Emphasize that all members of the group—not just the instructor who taught the lesson—should listen and provide feedback, and support their statements with concrete evidence. Remind your instructors to review the lesson design, not its delivery.

[5] Use a lesson plan template of your choice. This could be the Mathematics Lesson Revision Template (#5), or any other template.

7. *Revise and re-teach the lesson.* Revise the lesson based on observations and analysis. Select a different group member to teach the revised lesson to another class that could benefit from the same content. Use the Checklist to Guide Mathematics Lesson Development (#6) to ensure the lesson stays aligned to CCR standards.

8. *Debrief after the revised lesson.* Repeat the observation and debriefing steps. During the debriefing, explore the relationship between the two versions of the lesson. Clarify what changes were made and how they related to the goal of instruction.

9. *Report on students' lessons learned.* Identify and discuss 1) the progress students made toward meeting the lesson study goal; and 2) the knowledge they gained and skills they learned along the way.

Completing Materials for Instructional Use

Build a resource library. Gather the work of various teams to create three sets of resources for staff to use. They include:

- Resource alignment charts that show the alignment of each evaluated resource to CCR standards.
- Revised lessons (aligned to CCR standards) from the resources that were modified to fill identified gaps.
- Aligned lessons that were adapted or created as part of each lesson study.

Sharing the results of the evaluation and revision of resources provides a practical method for disseminating information to those who were not originally involved in evaluating and revising them. This includes information about the demands of CCR standards, how well resources align, and how to continue to revise instructional resources.

Final Reflections

After completing all of Unit 1, Translating Standards Into CCR-Aligned Curriculum and Instruction, ask your instructors to reflect on the activities' effectiveness and on what they learned. Below are some discussion questions to consider:

- What worked well and what could be improved?
- How has participating in these activities changed your thinking about CCR standards?
- How will you use these new methods and materials to improve your teaching practice and students' learning?
- What additional professional development resources and materials might you need?