



# College and Career Readiness Standards-in-Action

Foundational  
Unit

1

FACILITATOR GUIDE  
MATHEMATICS

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**FOCUSING ON THE  
MAJOR WORK OF  
THE LEVELS**

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## Background and Purpose

The College and Career Readiness (CCR) Standards for Adult Education exemplify three key advances in instruction prompted by the Common Core State Standards (CCSS). This unit provides adult educators with an introduction to *focus*, the first of these three advances. A compelling body of research indicates that focus within mathematics standards, curricula, and instruction is crucial to student performance. Implementation of a set of focused and high-quality mathematics standards is integral to the preparation of adult learners for college and careers.

Some of the most powerful research highlighting the critical importance of focus in mathematics instruction came as a result of the Trends in International Mathematics and Science Study (TIMSS). This study assessed the performance of students in different countries at grade levels equivalent to grades 4, 8, and 12.<sup>1</sup> The performance of U.S. students was much poorer than those of students from many other countries.

One of the findings of TIMSS research was that focus—or the depth with which topics are treated—matters a lot. Covering too many topics has a negative impact on student learning, and evidence indicated a lack of focus in U.S. mathematics instruction. Higher performing countries had markedly more focus within their curriculum standards; their students focused their time and energy on fewer topics and learned in depth what they needed to learn.

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<sup>1</sup>Trends in International Mathematics and Science Study (TIMSS), 2007; Schmidt, W.H. and Houang, R.T., “Lack of Focus in the Intended Mathematics Curriculum: Symptom or Cause?” in Loveless (ed.), *Lessons Learned: What International Assessments Tell Us About Math Achievement*. Washington, DC: Brookings Institution Press, 2007; and Schmidt, W.H., H.A. Wang, and C.C. McKnight, (2005) “Curriculum Coherence: An Examination of US Mathematics and Science Content Standards From An International Perspective,” *Journal of Curriculum Studies*, 37(5).

A number of surveys of postsecondary faculty and employers also provide a research base for determining what mathematics is really important in preparing adult learners for college and career readiness. For example, the ACT National Curriculum Survey, which is administered every three to five years, helps validate which mathematics topics are considered the most important prerequisites by instructors of credit-bearing first-year postsecondary courses.<sup>2</sup> The survey also provides information on when K-12 teachers typically teach particular mathematics topics, revealing that some topics are taught at one grade level and then re-taught in subsequent grades or courses. This type of research validates that focus is indeed critical if instructional time is to be used effectively, efficiently, and productively to prepare students for college and careers.

These findings are the impetus behind Key Advance 1 in the CCR Standards for Adult Education. The standards focus on a targeted set of content at each level; and within each level, certain content is prioritized. For example, the priority content areas addressed in the early levels of the CCR Standards emphasize a clear understanding of place value and its connection to operations. This focus on numeracy leads to a deeper understanding of the properties of operations at subsequent levels. It also encourages fluency in the application of those properties, eventually for all operations with all number systems and in a variety of contexts. This focus on what is emphasized in the standards gives students a strong foundation that helps them prepare for college and careers.

This unit provides opportunities for adult educators to work together to understand the focus areas in each of the levels of the CCR Standards. It provides experiences and a tool to help them see the areas of emphasis across the levels, and how areas of focus in one level support future learning.

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<sup>2</sup>2009 ACT National Curriculum Survey.

## Overview

This unit will allow participants to investigate in depth Key Advance 1—focus—within the five adult education levels (A, B, C, D, and E) of the CCR Standards. Participants will learn to identify topics that are and are not major topics for the various levels. During the hands-on activity for this unit, participants first will read descriptions that summarize the major work of each CCR adult education level. These descriptions define the most critical concepts and skills for preparing students for college and careers.

Then participants will review a set of lesson topics listed by level to determine which of the topics are likely to address the major work of that level. During this activity, small- and whole-group discussions are crucial to building clear and common understanding among participants of the major work of each level.

## Materials You Need

For Participants (one copy per participant):

- Directions for Participants
- Worksheet: Focusing on the Major Work of the Levels
- Resource: Major Work of the Levels
- Resource: CCR Standards for Adult Education (one copy per table)

For Facilitators:

- Unit 1 PowerPoint Presentation: Focusing on the Major Work of the Levels
- Answer Key and Rationales: Focusing on the Major Work of the Levels

## Time Frame to Complete the Unit

Allow **90 minutes** for this unit, using the following guidance to help divide the time:

- 20 minutes – Introduce the unit.
- 50 minutes – Work in pairs and small groups to complete the activity.
- 20 minutes – Discuss reflections.

NOTE: Participants who are unfamiliar with the CCR Standards in mathematics will need more time to complete the activity. They will need time to compare the mathematical topics presented in the worksheet to the standards for each level.

## Guidelines for Implementation

### Step 1: Preparations

- a) Create small groups of participants, ideally with four to eight participants at each table.** The maximum size of a group for this session depends on your space, need, and comfort level. A guiding principle is to make sure the group is small enough that you can be in touch with each table of participants to determine whether they understand the concepts and are fully engaged or they are struggling and need more support.
- b) For best results, select table leaders in advance or ask each table of participants during the session to choose one person to be their lead.** The table leader will be responsible for keeping track of time, bringing participants together at the appropriate times, making sure participants are moving along, sharing information at appropriate times, and notifying you if there are questions or the group needs more support. (If table leaders are selected in advance, provide them with copies of the PowerPoint Presentation, handouts, and answer key and rationales so they can prepare for the session.)
- c) As a general strategy, be prepared to circulate around the room when participants are working**

**individually or in pairs.** Circulating will allow you to check on their understanding and be readily available to answer questions.

- d) Prepare the materials for participants.** Copy the resource, Major Work of the Levels, on colored paper so that participants can spot it easily. Provide a single copy of the CCR Standards for each table. In advance of the session, advise participants who think they might need their own copy of the CCR Standards to bring it with them.
- e) Become familiar with the PowerPoint Presentation and materials, including the answer key and rationales.** This will allow you to be at ease with the information and flow of the unit. Detailed notes are provided within the PowerPoint Presentation to help you prepare for the session. In particular, notes for each slide include the identification of the Big Idea, Facilitator Talking Points, and Facilitator Notes. These can help you frame your presentation and provide you important detail and context. This information is coupled with the information offered in this Facilitator Guide—including the research base, rationale, advice, and other guidelines—to give you the support and guidance you require.

Reviewing the answer key and rationales will support your efforts to stimulate discussion about the concepts that are and are not the major work of each level and the reasons why. The answer key is for your edification and is not meant to be handed out to participants. The key includes “right” answers, but not necessarily the only right answers; it includes well-supported judgments that will guide you as you reflect on participant questions and answers.

- f) Be aware of additional resources that can deepen your understanding, and that of participants, with respect to the focus of the CCR Standards.** You can find

descriptions of the critical areas for each mathematics level in the report, *College and Career Readiness Standards for Adult Education*, on the following pages: Level A, page 51; Level B, page 54; Level C, page 60, Level D, page 70; and Level E, page 79.

**Step 2: Implementation** (20 minutes to introduce; 50 additional minutes working in pairs or small groups)

**Introduce the three key advances in the CCR Standards for Mathematics.**

**Slide 2:** Discuss with participants the three key advances and how they interact and build up to college and career readiness: While Unit 1 emphasizes *focus*, which is Key Advance 1, it is important to understand that the CCR Standards were developed to reflect and exemplify the three keys advances of *focus*, *coherence*, and *rigor*.

The Major Work of the Levels resource used for this unit is critical in helping teachers understand the topics to be emphasized within each level. At the same time, it is critical for teachers to understand that there is a flow and progression of content across the levels. Supporting topics within and across levels not only provides a sense of coherence, but also reinforces the major work of the levels.

Similarly, students need to develop conceptual understanding, procedural skill and fluency, and the ability to apply their mathematical understandings and skills to solve problems (a focus of Unit 3). This includes regular work with the Standards for Mathematical Practice (a focus of Unit 4). It is the interaction of these key advances of *focus*, *coherence*, and *rigor* within the CCR Standards, coupled with the Standards for Mathematical Practice, that will prepare adult learners for college and careers.



**Introduce the concept of focusing on the major work of each level.**

**Slide 3:** Explain the objectives of the unit: 1) to understand the research base that explains the importance of focus; and 2) to delve into the CCR Standards and build an understanding of the critical areas for each level as a foundation for developing a coherent and rigorous mathematics curriculum. This unit teaches adult educators to focus deeply on the major work of each level rather than race to cover a multitude of topics in instruction. It also provides participants with insight into the relative emphasis given to each of the content domains (Number, Geometry, Algebra, and Statistics and Probability) as students progress through the levels of learning.

**Slide 4:** When referencing research, note findings from TIMSS and the ACT National Curriculum Survey that support focusing on what students are taught. You also can mention the variety of surveys that have been conducted with employers and educators to help define college and career readiness. For example, Achieve also collected information from K-12 and postsecondary educators as well as employers in its work to define college and career readiness.

**Slide 5:** Implementation of the CCR Standards means that more time will be spent on fewer topics at each level. Additional content can and should be taught, but in support of and connected to the major work at each level. For example, data representation and interpretation is not major work of Level B. However, some of those standards can be used to better understand fractions and standard units for linear measure by asking students to generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch.

**Slides 6-9:** These slides describe the major areas of focus for Levels A and B (Slide 6), Level C (Slide 7), Level D (Slide 8), and Level E (Slide 9). Walk participants through each of the slides, pointing out the areas of focus. You might have participants read through the descriptors on each slide and then discuss them, or you might read through them aloud together and discuss. It is important to tell participants that these are not verbatim repeats of the concepts in the resource, Major Work of the Levels, but they represent the same concepts.

**Begin the hands-on activity of Focusing on the Major Work of the Levels.**

**Slides 10-11:** *Distribute the participants' materials for Focusing on the Major Work of the Levels.* The materials include directions for participants, the worksheet for Focusing on the Major Work of the Levels, the resource tool called Major Work of the Levels, and, for each table, a copy of the CCR Standards for Adult Education.

**Slides 12-13:** *Provide directions to participants on how to complete the activity.* Be sure all instructions are clearly understood before turning the room over to participants to start the activity. Have participants follow the directions below for Level A. Then, direct table members to pause, discuss their findings, and reach some consensus as a table before beginning work on Levels B through E. Ask participants to work with a partner at their tables.

*TIP: Encourage participants who are less familiar with the CCR Standards to use them to complete the Focusing on the Major Work of the Levels worksheet.*

Here are the directions to give participants:

1. On the worksheet, circle the topics for each level that are part of the major focus for that level.
2. Use the resource, Major Work of the Levels, to help you make your decisions. You also may use a copy of the CCR Standards, if needed.

3. Discuss your selections and rationales at your table. Here are some questions to guide your discussion:
- What are some rationales for why you did or did not circle a particular topic as critical to the level?
  - Did anyone have a hard time deciding to which critical area a topic belongs? Tell us where and why.
  - Are any of the lesson objectives that you did not select for the given level critical to a different level?
  - Do you think that any of the topics you did not select are important to teach? If so, how might you relate them to one of the critical areas for the level?

### **Reflections: Thinking Back and Looking Forward (20 minutes)**

Awareness of the major work for each level will help participants see the flow and progression of mathematics as students move from level to level, and to think about how the standards within and across levels support and build on one another (Unit 2).

*TIP: This work is the foundation for success. Participants will refer to the resource, Major Work of the Levels, throughout the remaining units.*

An awareness of the major work of each level will also help participants as they think about what rigorous treatment of these topics might look like in a mathematics program designed to build the conceptual understanding and procedural skills of students and prepare them to apply these understandings and skills to solve problems (Unit 3).

Awareness of the major work of the levels also will be important as participants come to understand the Standards for Mathematical Practice and think about how those Standards can best be implemented to support the major work of each level (Unit 4).

An understanding of the focus inherent in the CCR Standards is essential for learning how to build a coherent and rigorous mathematics curriculum.

If there is time, re-ask the discussion questions (Slide 13), but now with the whole group:

- What are some rationales for why you did or did not circle a particular topic as critical to the level?
- Did anyone have a hard time deciding to which critical area a topic belongs? Tell us where and why.
- Are any of the lesson objectives that you did not select for the given level critical to a different level?
- Do you think that any of the topics you did not select are important to teach? If so, how might you relate them to one of the critical areas for the level?

**Slide 14:** End the activity by asking participants to discuss the importance of focus in mathematics standards:

- Why focus?
- There's so much mathematics that students could be learning; why limit what students are taught?

These questions should stimulate discussion of the value of focusing on fewer topics so that students can develop deeper understanding of the content that matters most to be prepared for postsecondary training and education. The ultimate goal for the teaching and learning of adults is to “focus on those standards” that are deemed *critical* to the level, and relate other level-specific standards to them.

**Slide 15:** Now ask participants to reflect on and then discuss what they have learned. Ask them how they plan to use what they have learned. Below are some questions for participants' reflections on their next steps:

- How has participating in this activity changed your thinking about the CCR Standards?
- How will you use the information and understanding you have acquired to improve your teaching practice and student learning?

- What additional training and tools would strengthen your ability to do so?

Once participants have a firm understanding of the importance of focusing on the major work of each level, the next priority is to concentrate on linking key concepts in mathematics across levels. This linking of concepts will allow participants to learn how to build on students' understanding of previously learned concepts and skills. Unit 2, *Thinking Across Levels to Connect Learning*, focuses on Key Advance 2 (coherence). It asks participants to organize select content from the CCR Standards in a progression of content to be learned from the lowest to the highest levels of adult learning.